SIEMENS

FUJI-Reader

SP

Service Manual

Preventive Maintenance

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CR-IR347/CR-IR347P
Service Manual

Preventive Maintenance (PM)

CR-IR347 Service Manual – Contents

Preventive Maintenance (PM)

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Control Sheet

Issue date	Revision number	Reason	Pages affected
10/20/2000	00	New release (FM2732)	All pages
05/15/2001	01	Corrections (FM3052)	PM - 94, 97
08/30/2001	02	Design changes; measures against noise (FM3142)	PM - 35, 38, 43, 55, 57-59, 62, 68, 69, 72, 74, 82, 90, 91, 94
08/30/2002	03	Image checks and other information added (FM3476)	PM - 12–15, 15.1–15.4, 46,

1. Preventive Maintenance Program

1.1 Preventive Maintenance Program List

Refer to	Program	Intervals	Work time (min)	Tools/jigs, measuring apparatus	Periodically replaced parts
2.1	Checking the Error Log	0.5Y	5 min		
2.2	Checking the Image	0.5Y	20 min		
3.	Cleaning the FD Drive and Magnetic Card Reader	0.5Y	5 min	FD drive cleaner Cleaning card	
4.	Removing the Covers	1Y	15 min		
5.	Turning OFF the High-Voltage Switch	1Y	–		
6.	Cleaning/Replacing the Air Filters	1Y/2Y	5 min		Air filters
7.1	Removing the Cassette Set Unit	1Y	10 min		
7.2	IP Removal Unit (Cleaning the Suction Cups)	1Y	5 min		
7.3	IP Removal Unit (Cleaning/Replacing the Rubber Rollers Located Under the IP Removal Arm and Shock Absorber-Attached Guide Plates)	1Y/3Y	15 min		Shock absorber-attached guide plates
7.4	IP Removal Unit (Cleaning/Replacing the Shock Absorber-Attached Guide Plates Located Under the IP Removal Unit)	1Y/3Y	5 min		Shock absorber-attached guide plates
7.5	IP Removal Unit (Cleaning/Replacing the Shock Absorber-Attached Guide Plates in the Conveyance Path of the IP Removal Unit)	1Y/3Y	20 min		Shock absorber-attached guide plates
7.6	IP Removal Unit (Cleaning the Rubber Rollers)	1Y	20 min		
7.7	Cassette Set Unit (Cleaning the Rubber Roller)	1Y	5 min		
7.8	Installing the Cassette Set Unit	1Y	10 min		
8.1	Removing the Erasure Conveyor	1Y	5 min		
8.2	Erasure Conveyor (Cleaning/Replacing the Erasure Lamps)	1Y/2Y	5 min		Erasure lamps
8.3	Erasure Conveyor (Cleaning/Replacing the Cleaning Rollers)	1Y/2Y	15 min		Cleaning rollers
8.4	Erasure Conveyor (Cleaning/Replacing the Shock Absorber-Attached Reflection Plate)	1Y/3Y	5 min		Shock absorber-attached reflection plate
8.5	Erasure Conveyor (Cleaning/Replacing the Shock Absorber-Attached Filter)	1Y/3Y	10 min		Shock absorber-attached filter
8.6	Erasure Conveyor (Cleaning/Replacing the Shock Absorber-Attached Guide Plates)	1Y/3Y	10 min		Shock absorber-attached guide plates
8.7	Erasure Conveyor (Cleaning the Rubber Rollers)	1Y	5 min		
8.8	Erasure Conveyor (Installing the Lamp House Assembly/Shock Absorber-Attached Reflection Plate)	1Y	5 min		
8.9	Erasure Conveyor (Installing the Cleaning Rollers)	1Y	5 min		
8.10	Installing the Erasure Conveyor	1Y	5 min		

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Refer to	Program	Intervals	Work time (min)	Tools/jigs, measuring apparatus	Periodically replaced parts
9.1	Subscanning Unit (Cleaning the SUS Belt/ Rubber Belt/Kapton¤ Belt)	2Y	10 min	Ethanol	
9.2	Pulling Out the Scanner Unit	1Y	5 min		
9.3	Removing the Side-Positioning Conveyor	1Y	5 min		
9.4	Side-Positioning Conveyor (Cleaning/ Replacing the Shock Absorber-Attached Guide Plates)	1Y/3Y	60 min		Shock absorber-attached guide plates
9.5	Side-Positioning Conveyor (Cleaning the Rubber Rollers)	1Y	5 min		
9.6	Subscanning Unit (Removing the Light-Collecting Guide Assemblies)	1Y	5 min		
9.7	Subscanning Unit (Cleaning the Light-Collecting Guide Assemblies)	1Y	5 min	Ethanol	
9.8	Subscanning Unit (Removing the Scanning Optics Unit)	1Y	5 min		
9.9	Subscanning Unit (Cleaning the Light-Collecting Mirror)	1Y	10 min	Ethanol	
9.10	Subscanning Unit (Cleaning the Rubber Rollers)	1Y	5 min		
9.11	Subscanning Unit (Cleaning the Shock Absorber-Attached Center Guide Plate/ Shock Absorber-Attached Guide Plate)	1Y	5 min		
9.12	Subscanning Unit (Cleaning the Glass Guide)	1Y	5 min	Ethanol	
9.13	Subscanning Unit (Replacing the Shock Absorber-Attached Center Guide Plate/ Shock Absorber-Attached Guide Plate)	3Y	30 min		Shock absorber-attached center guide plate/shock absorber-attached guide plate
9.14	Subscanning Unit (Installing the Scanning Optics Unit)	1Y	5 min		
9.15	Subscanning Unit (Installing the Light-Collecting Guide Assemblies)	1Y	10 min		
9.16	Installing the Side-Positioning Conveyor	1Y	5 min		
9.17	Pushing In the Scanner Unit	1Y	5 min		
10.	Turning ON the High-Voltage Switch	1Y	5 min		
11.	Installing and Cleaning the Covers	1Y	20 min		
12.	Checking the Date and Time	1Y	5 min		
13.	Deleting the Error Log	0.5Y	5 min		
14.	Checking the Image	0.5Y	20 min		

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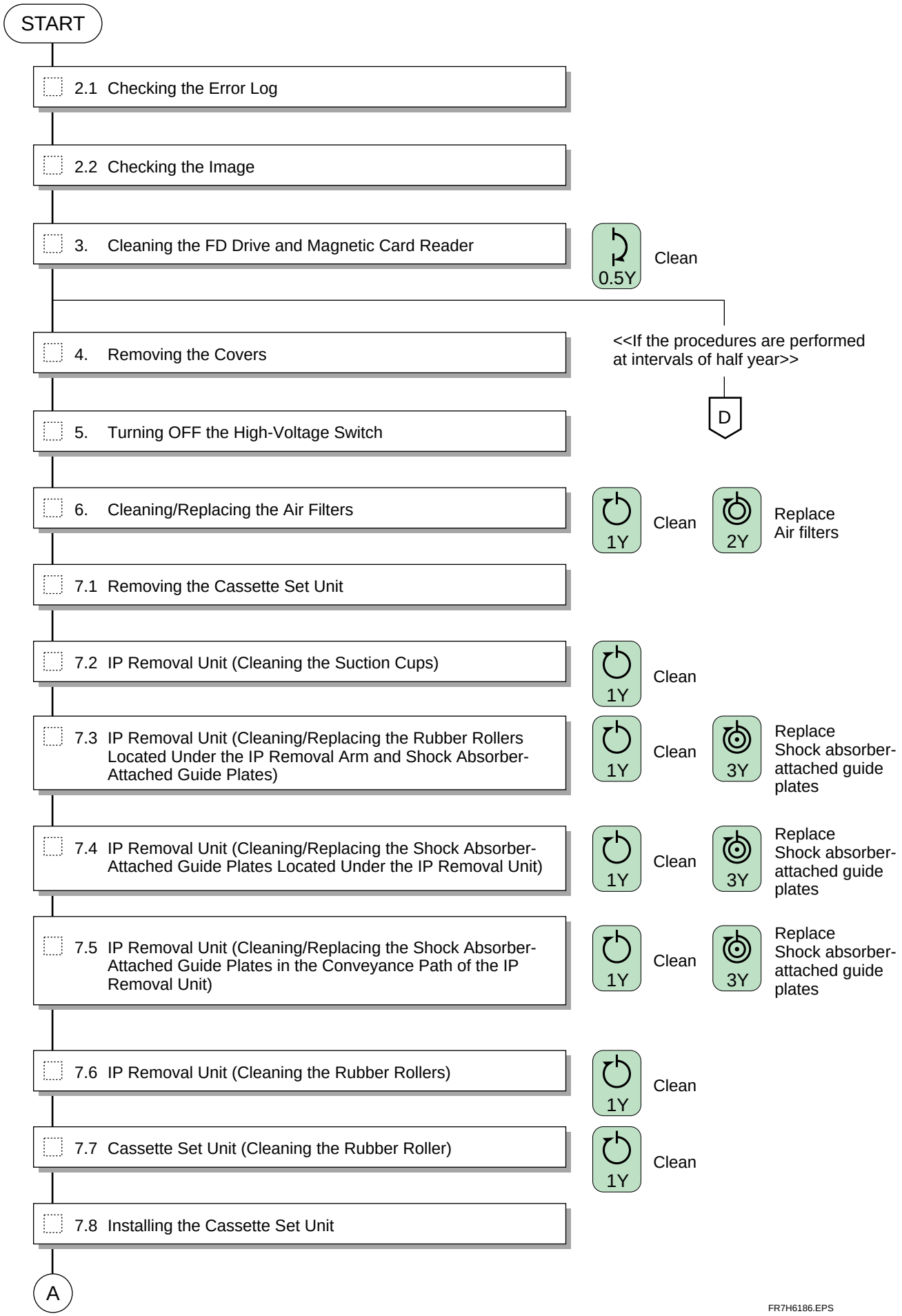
1.2 Preventive Maintenance Flow



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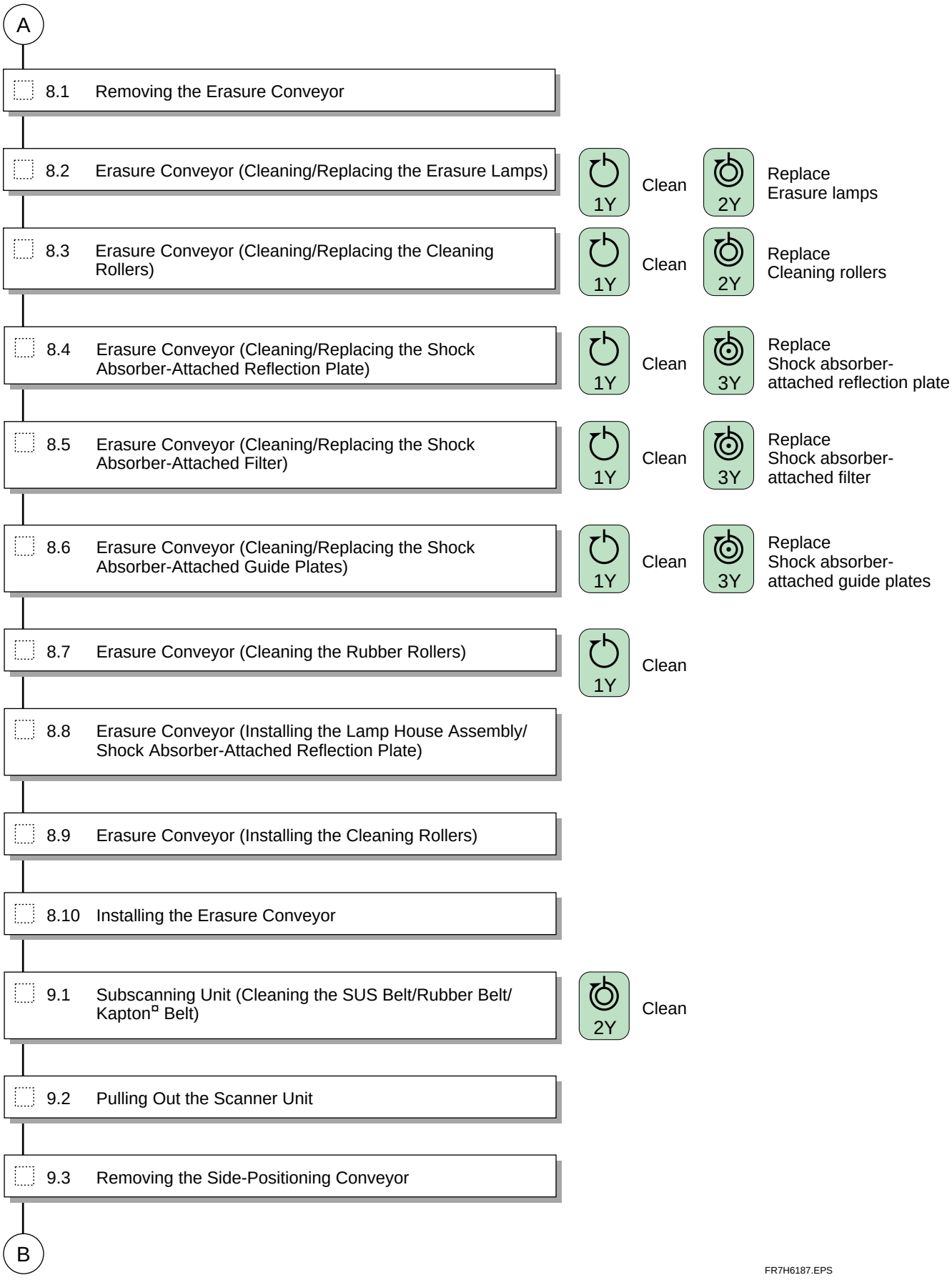
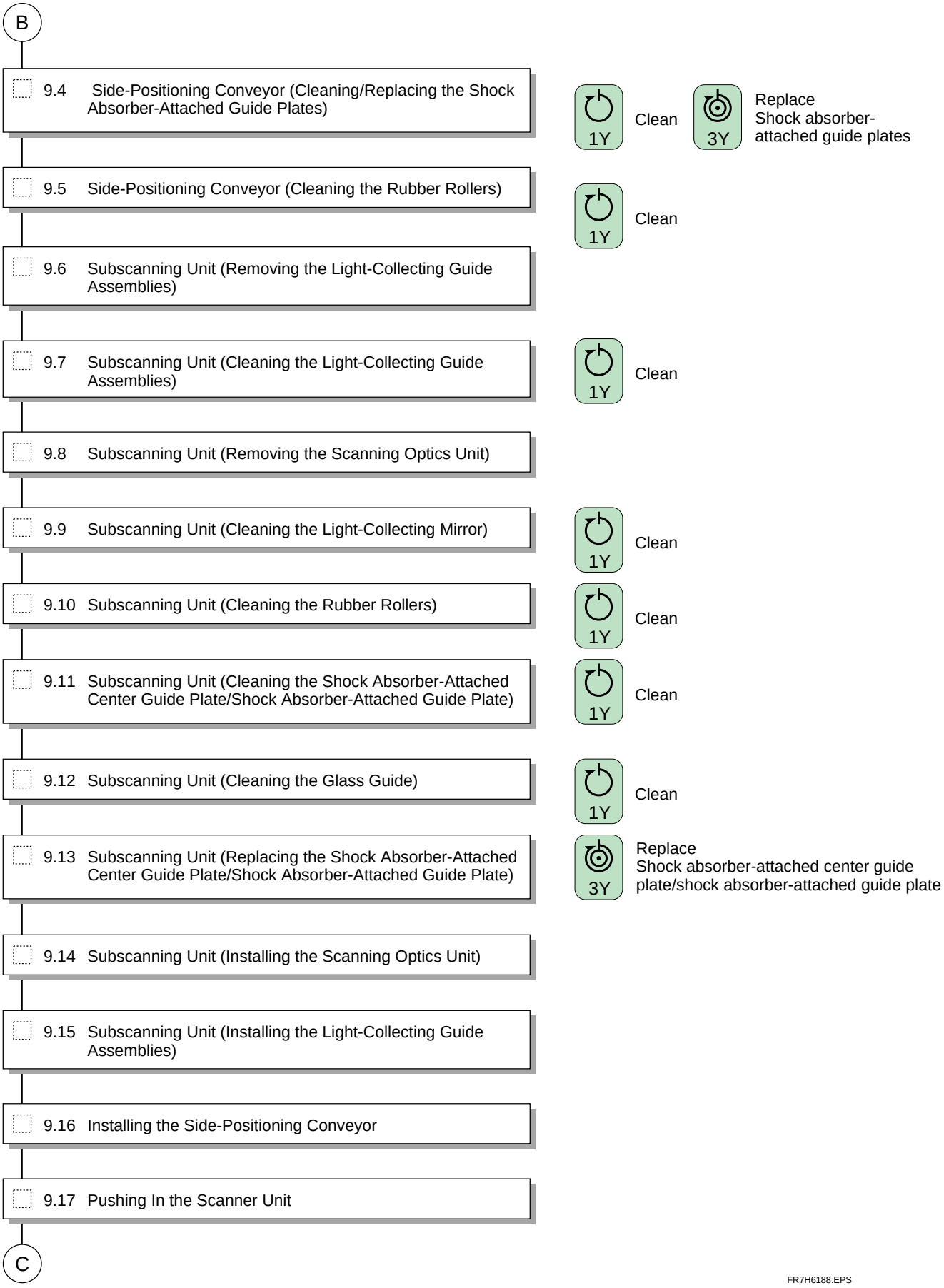
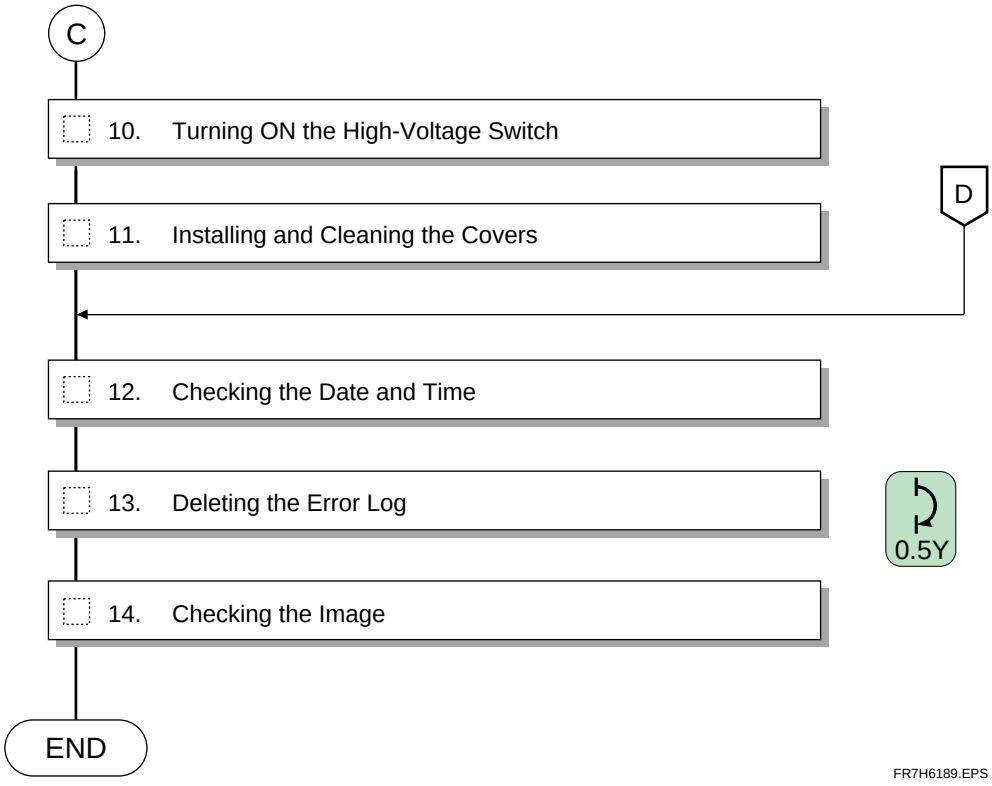
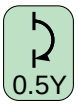

A
8.1 Removing the Erasure Conveyor
8.2 Erasure Conveyor (Cleaning/Replacing the Erasure Lamps)
1Y
Clean
2Y
Replace
Erasure lamps
8.3 Erasure Conveyor (Cleaning/Replacing the Cleaning Rollers)
1Y
Clean
2Y
Replace
Cleaning rollers
8.4 Erasure Conveyor (Cleaning/Replacing the Shock Absorber-Attached Reflection Plate)
1Y
Clean
3Y
Replace
Shock absorber-attached reflection plate
8.5 Erasure Conveyor (Cleaning/Replacing the Shock Absorber-Attached Filter)
1Y
Clean
3Y
Replace
Shock absorber-attached filter
8.6 Erasure Conveyor (Cleaning/Replacing the Shock Absorber-Attached Guide Plates)
1Y
Clean
3Y
Replace
Shock absorber-attached guide plates
8.7 Erasure Conveyor (Cleaning the Rubber Rollers)
1Y
Clean
8.8 Erasure Conveyor (Installing the Lamp House Assembly/ Shock Absorber-Attached Reflection Plate)
8.9 Erasure Conveyor (Installing the Cleaning Rollers)
8.10 Installing the Erasure Conveyor
9.1 Subscanning Unit (Cleaning the SUS Belt/Rubber Belt/ Kapton¤ Belt)
2Y
Clean
9.2 Pulling Out the Scanner Unit
9.3 Removing the Side-Positioning Conveyor
B
FR7H6187.EPS


B
9.4 Side-Positioning Conveyor (Cleaning/Replacing the Shock Absorber-Attached Guide Plates)
1Y
Clean
3Y
Replace
Shock absorber-attached guide plates
9.5 Side-Positioning Conveyor (Cleaning the Rubber Rollers)
1Y
Clean
9.6 Subscanning Unit (Removing the Light-Collecting Guide Assemblies)
9.7 Subscanning Unit (Cleaning the Light-Collecting Guide Assemblies)
1Y
Clean
9.8 Subscanning Unit (Removing the Scanning Optics Unit)
9.9 Subscanning Unit (Cleaning the Light-Collecting Mirror)
1Y
Clean
9.10 Subscanning Unit (Cleaning the Rubber Rollers)
1Y
Clean
9.11 Subscanning Unit (Cleaning the Shock Absorber-Attached Center Guide Plate/Shock Absorber-Attached Guide Plate)
1Y
Clean
9.12 Subscanning Unit (Cleaning the Glass Guide)
1Y
Clean
9.13 Subscanning Unit (Replacing the Shock Absorber-Attached Center Guide Plate/Shock Absorber-Attached Guide Plate)
3Y
Replace
Shock absorber-attached center guide plate/shock absorber-attached guide plate
9.14 Subscanning Unit (Installing the Scanning Optics Unit)
9.15 Subscanning Unit (Installing the Light-Collecting Guide Assemblies)
9.16 Installing the Side-Positioning Conveyor
9.17 Pushing In the Scanner Unit
C
FR7H6188.EPS

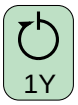

C
10. Turning ON the High-Voltage Switch
11. Installing and Cleaning the Covers
D
12. Checking the Date and Time
13. Deleting the Error Log
0.5Y
14. Checking the Image
END
FR7H6189.EPS

1.3 Checking the Intervals

To facilitate the understanding of the inspection intervals of each preventive maintenance item, the item is indicated by one of the following icons in this volume.



Indicates that the procedures should be performed at intervals of half year.



Indicates that the procedures should be performed at intervals of one year.

Indicates that the procedures should be performed at intervals of two years.

Indicates that the procedures should be performed at intervals of three years.

1.4 Precautions for Preventive Maintenance

CAUTION

The red-painted screws should never be removed.

◆ *INSTRUCTION* ◆

The yellow-painted screws require adjustments when components are reinstalled. When reinstalling the components, follow the check/adjustment procedures.

◇ *REFERENCE* ◇

With this machine, the mounting screws for the shock absorber-attached guide plates to be replaced are blue-painted.

2. Checks Before Maintenance

0.5Y

At intervals of half year → Check.

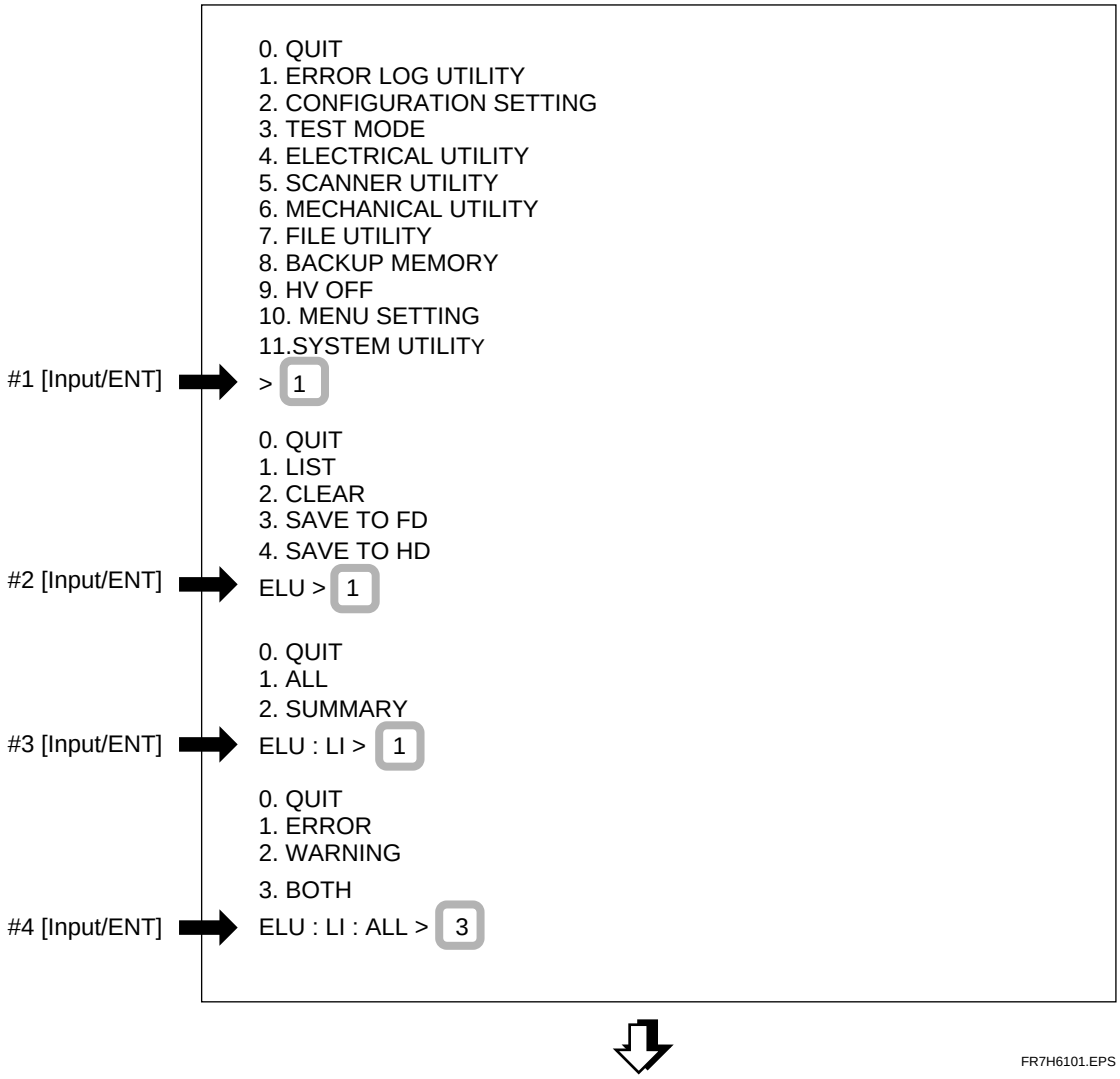
2.1 Checking the Error Log

(1) Start the M-Utility.

(2) Open the error log.

◇ ***REFERENCE*** ◇

Below is shown an example where errors and warning messages are displayed. To check the number of occurrences for each error code, select "2. SUMMARY", instead of "1. ALL", at step #3.



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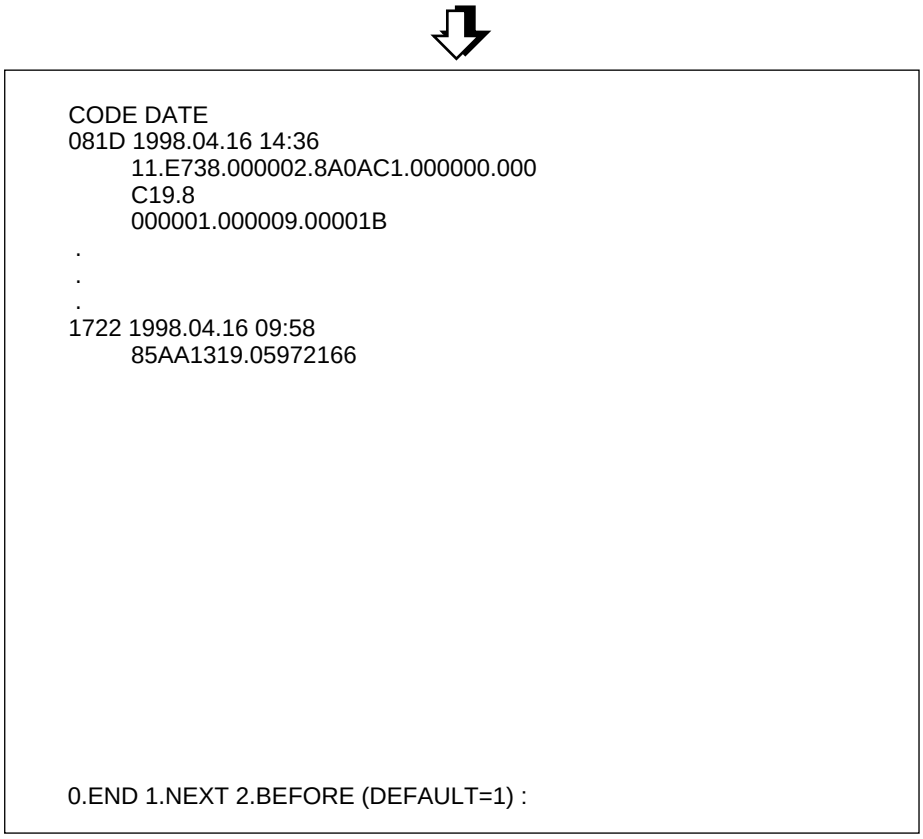


FR7H6102.EPS

(3) Check the error log displayed.

◆ *CHECK* ◆

Check if error logs are generated.
If error logs are generated, see [Troubleshooting Volume].

2.2 Checking for Image Problems

■ Check for Nonuniformity, Sensitivity, and Density

(1) Expose two IPs of all sizes found at the institution (both ST and HR types). Expose the first in the normal direction, and the second in a 180-degree rotated orientation.

The IP exposure conditions are as follows.

❍ ST

- Dose: 1 mR
- X-ray tube target : Tungsten
- Distance: 1.8 m
- Voltage: 80 kV
- Current: 50 mA
- Time: 0.013 sec

❍ HR

- Dose: 20 mR
- X-ray tube target/filter: Molybdenum/molybdenum
- Distance: 0.55 m
- Voltage: 28 kV
- Current: 100 mA
- Time: 0.053 sec

(2) Using the test menu, record and output an image.

❍ ST

"感度" (for Japanese version)/"SENSITIVITY" (for versions other than Japanese)

❍ HR

"感度-1" (for Japanese version)/"SensitivityHQ" (for U.S. version)/"SENSITIVITY2" (for versions other than Japanese and U.S.)

(3) Check to ensure that there is no nonuniformity on the output film or the image on the image monitor .

◆ *CHECK* ◆

Check for nonuniformity.
If any nonuniformity is found, refer to "10. Troubleshooting Procedures Based on Abnormal Image" in the "Troubleshooting" volume.

(4) Using the output film, check the sensitivity.

◆ ***CHECK*** ◆

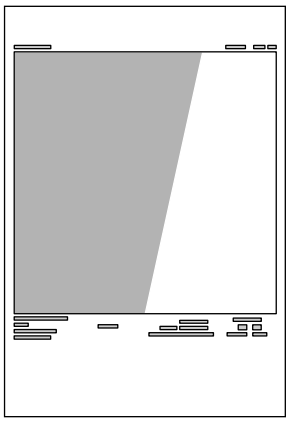
Make sure that the S value on the film is held within the following range.
ST: 140 ≤ S value ≤ 260
HR: 84 ≤ S value ≤ 156

(5) Make sure that there is no density unbalance in the image of the output film.

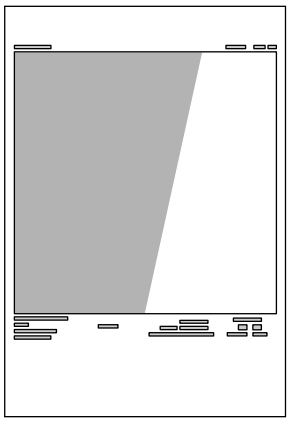
◆ ***CHECK*** ◆

Make sure that there is no density unbalance in the main scan direction.
If any density unbalance is found, compare the films outputted from two IPs of the same size to isolate its probable cause.

- *If the density unbalance positions in the main scan direction are the same*
  ➪ *The culprit is an improper mounting of the light-collecting guide assembly.*



IP in normal orientation (first)



IP in 180-degree rotated orientation (second)

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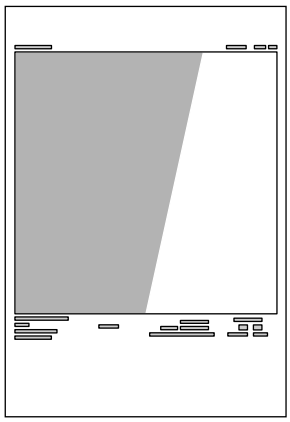
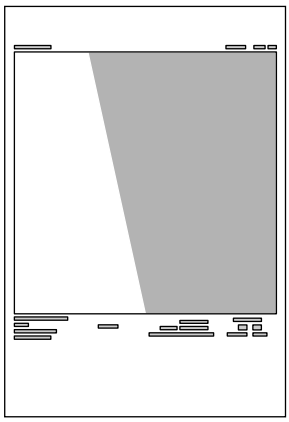
- *If the density unbalance positions in the main scan direction are different*
  ➪ *The exposure-related component(s) may be a probable cause.*



IP in normal orientation (first)



IP in 180-degree rotated orientation (second)

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■ Check for Jitter and HR

(1) Place steel rules and a washer on IPs of all sizes found at the institution, and expose them. (Both ST and HR types. For the layout, see the illustration below.)

The IP exposure conditions are as follows.

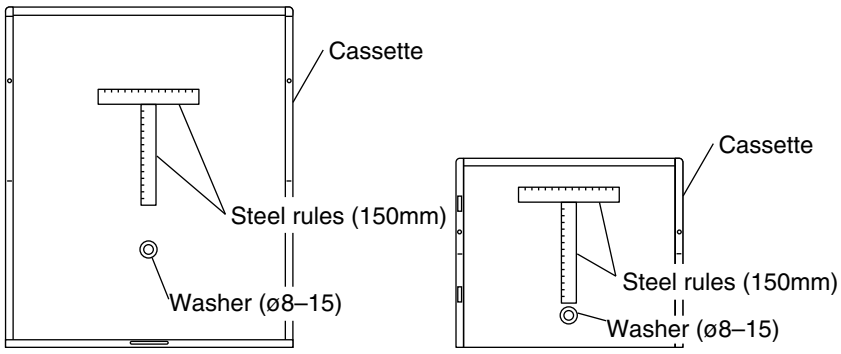
❍ ST

- Dose: 1 mR
- X-ray tube target : Tungsten
- Distance: 1.8 m
- Voltage: 80 kV
- Current: 50 mA
- Time: 0.013 sec

❍ HR

- Dose: 20 mR
- X-ray tube target/filter: Molybdenum/molybdenum
- Distance: 0.55 m
- Voltage: 28 kV
- Current: 100 mA
- Time: 0.053 sec

The layout of the steel rules and washer is shown below.



(2) Using the test menu, record and output an image.

❍ ST

“画像フォーマット” (for Japanese version)/“IMAGE FORMAT” (for versions other than Japanese)

❍ HR

“画像フォーマット-2” (for Japanese version)/“BREAST, L (DSR)” or “BREAST, R (DSR)” (for U.S. version)/“IMAGE FORMAT2” (for European version)

(3) Make sure that there is no jitter in the image of the border and steel rules on the output film.

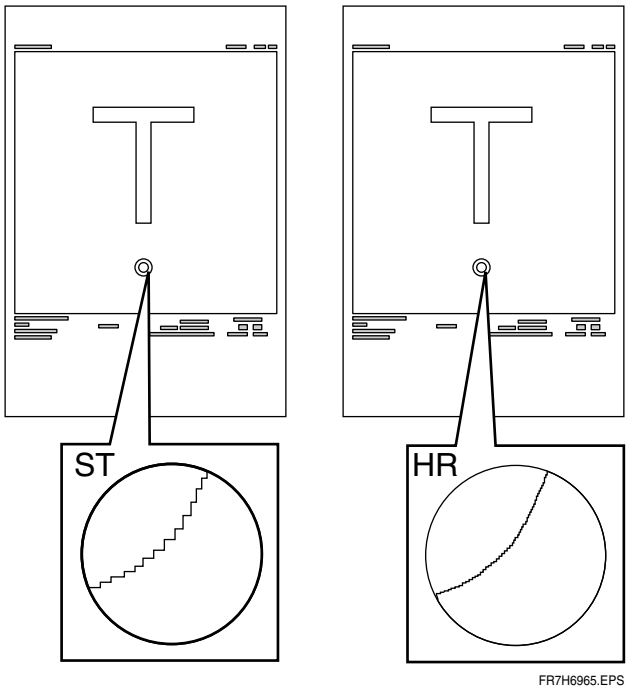
◆ ***CHECK*** ◆

Check for jitter.
If any jitter is found, refer to “10. Troubleshooting Procedures Based on Abnormal Image” in the “Troubleshooting” volume.

(4) Compare the images of the washer for ST and HR to ensure that the image for HR is smoother.

◆ ***CHECK*** ◆

Using a loupe, make sure that the image of the washer’s curvature for HR appears smoother than that for ST.

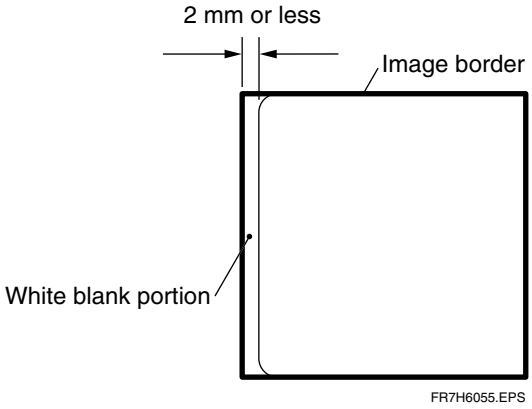


■ Check for Format

Make sure that the white blank portion, as measured from the outermost side of the image border of the output film, is 2 mm or less in actual size on the IP.

◆ *CHECK* ◆

Make sure that the white blank portion is 2 mm or less.
If anything abnormal is found, refer to the "Troubleshooting" volume.



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◆ *NOTE* ◆

The distance measured on the film may differ from the actual size on the IP, depending on the reading size or film size. Using the distance measured on the film and the reduction factor for the film, calculate the actual size on the IP. Compute the actual size on the IP according to the following formula.

$$\text{Actual size on IP} = \text{Measured value} \times \frac{100}{\text{Reduction factor (\%)}}$$

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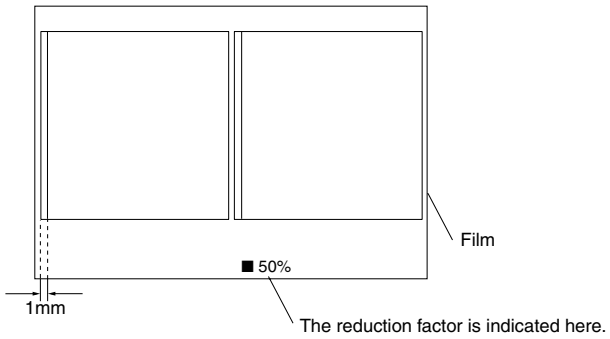
◇ *REFERENCE* ◇

For example, when a two-in-one image of 14"x14" (35cm x 35cm) is outputted to B4 film, the resulting reduction factor is 50%. If the distance measured on the film is 1 mm, then actual size on the IP is 2 mm. Calculate the distance in actual size on the IP as shown below.

$$\text{Actual size on IP: } \left[\text{Measured value} \times \frac{100}{\text{Reduction factor (\%)}}\right] = 1\ (\text{mm}) \times \frac{100}{50\ (\%)} = 2\ (\text{mm})$$



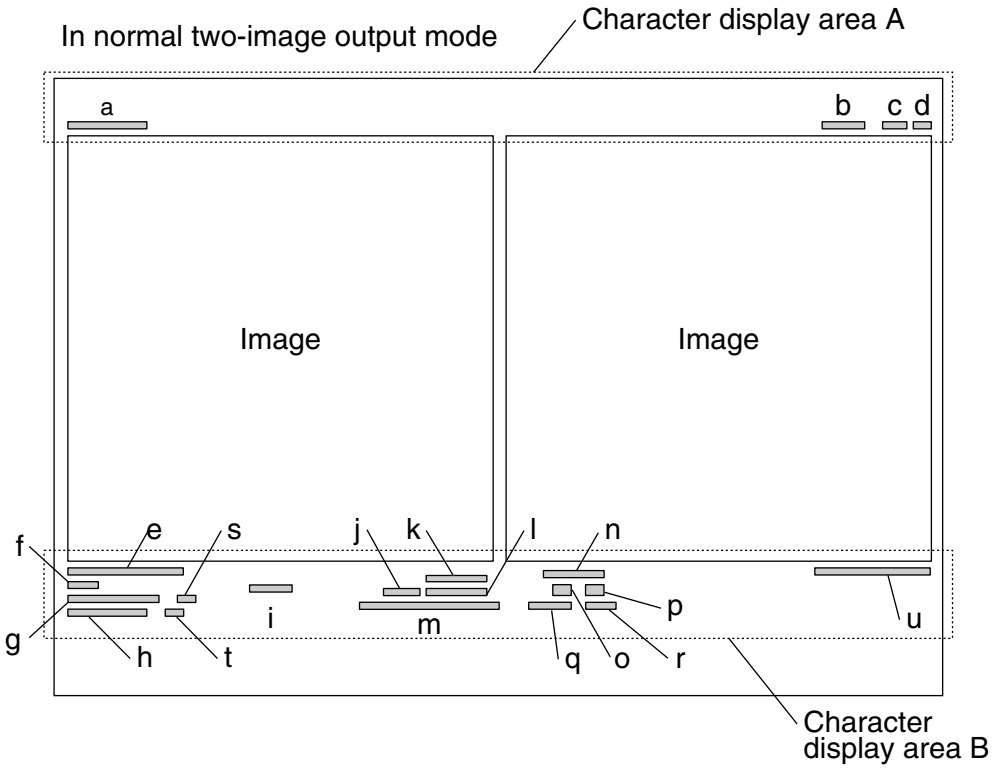
FR7H6960.EPS

■ Check for Output Characters

Make sure that the output characters are indicated correctly on the output film.

◆ *CHECKS* ◆

- *Make sure that the output characters are indicated correctly.*
  If anything abnormal is found, refer to "4. [2] CONFIGURATION SETTING" in the "Maintenance Utility" volume.
- *Ensure that there is nothing abnormal with the output characters.*
  If anything abnormal is found, refer to the "Troubleshooting" volume.



❍ Character display area A (above the image area)

- a: Hospital name (institution name)
- b: IP number
- c: EDR mode and menu code
- d: System ID and image number

❍ Character display area B (below the image area)

- e: Image processing conditions
- f: Exposure menu name
- g: Standardization conditions and amendments
- h: Engineer code and exposure table information
- i: Department name
- j: Patient ID
- k: Patient name (kana)
- l: Patient name (kanji)
- m: Exposure date and time
- n: Film mark
- o: Sex
- p: Age or birth date
- q: Image reduction ratio
- r: Set processing information
- s: Left-right reversal mark (Я)
- t: Data compression code
- u: PEM information or Ene.-Sub./superposition information

FR7H6962.EPS

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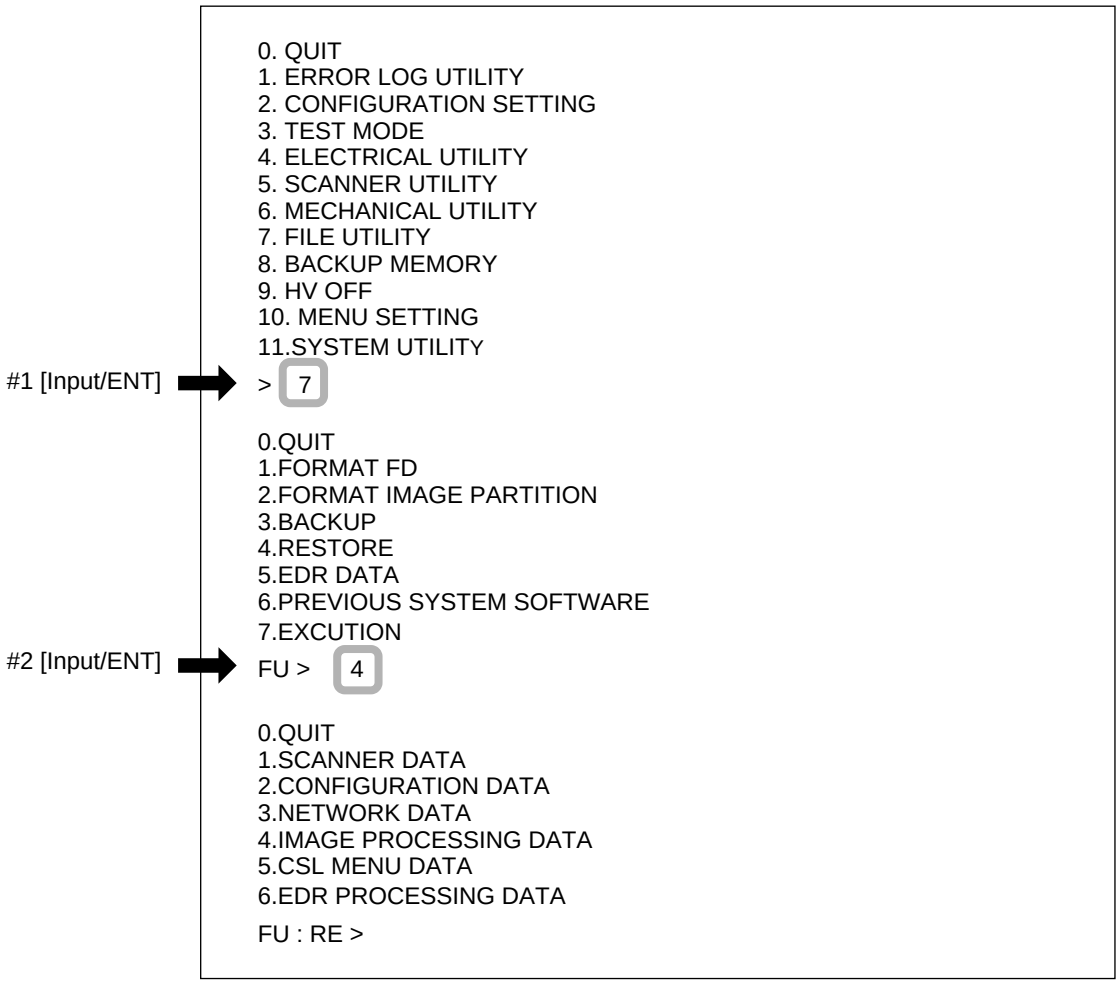
3. Cleaning the FD Drive and Magnetic Card Reader

At intervals of half year→ Clean.

■ Cleaning the FD Drive

(1) Start the M-Utility.

(2) Select the FD reading.



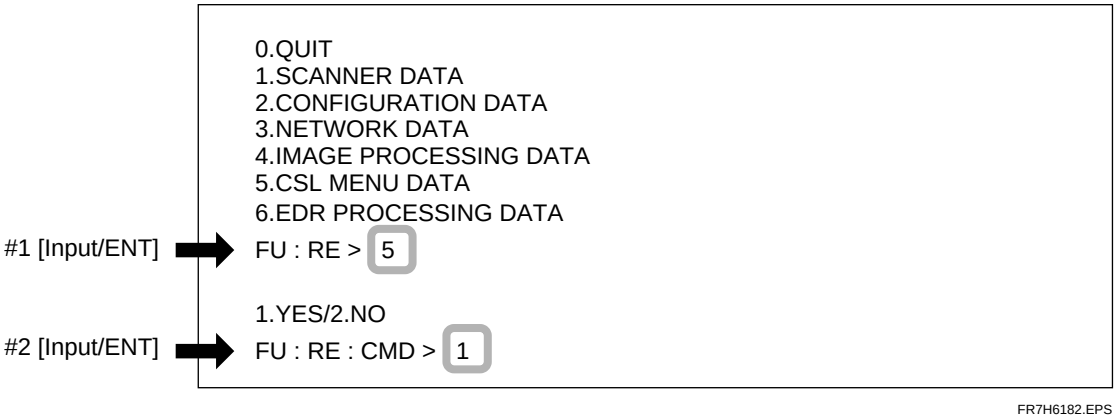
FR7H6176.EPS

(3) Insert the FD drive cleaner into the FD drive.

(4) Execute the FD reading.

◇ ***REFERENCE*** ◇

The number to be selected for the FD reading at step #1 may be either 1 through 6. "5. CSL MENU DATA" is selected by way of example.



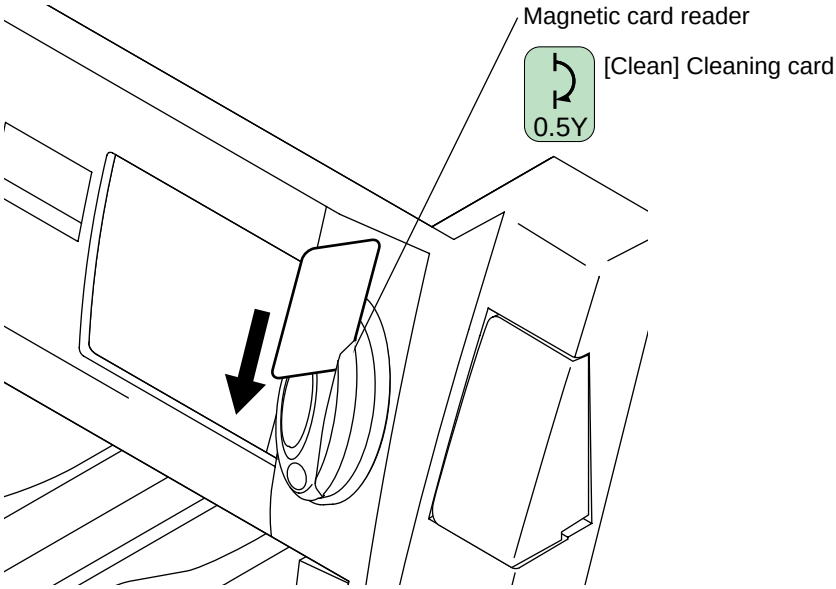
FR7H6182.EPS

(5) Repeat step (4) several times.

(6) Quit the M-Utility.

■ Cleaning the Magnetic Card Reader (for CSL Type Only)

Pass the cleaning card through the magnetic card reader several times.



FR7H6167.EPS

4. Removing the Covers

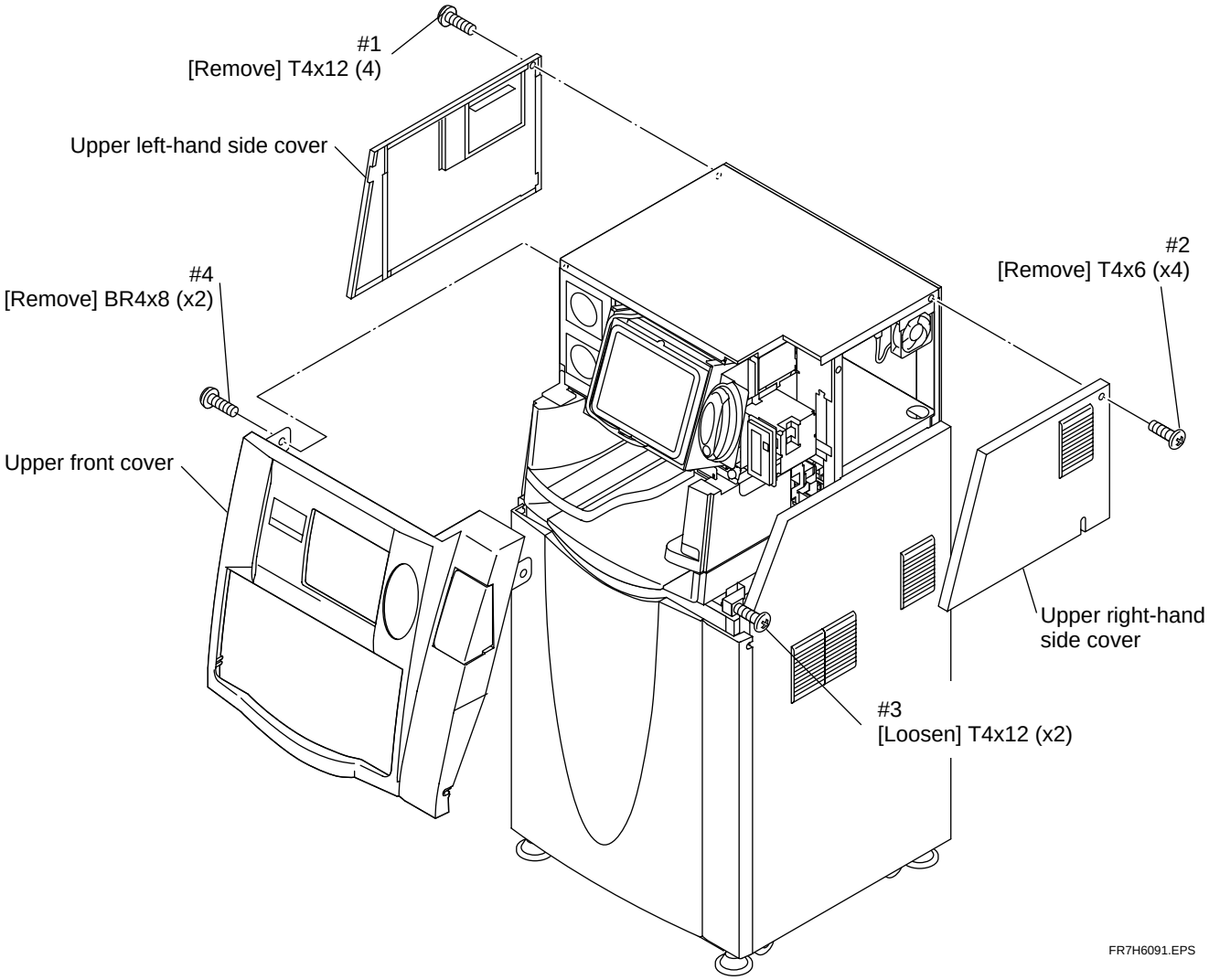
1Y

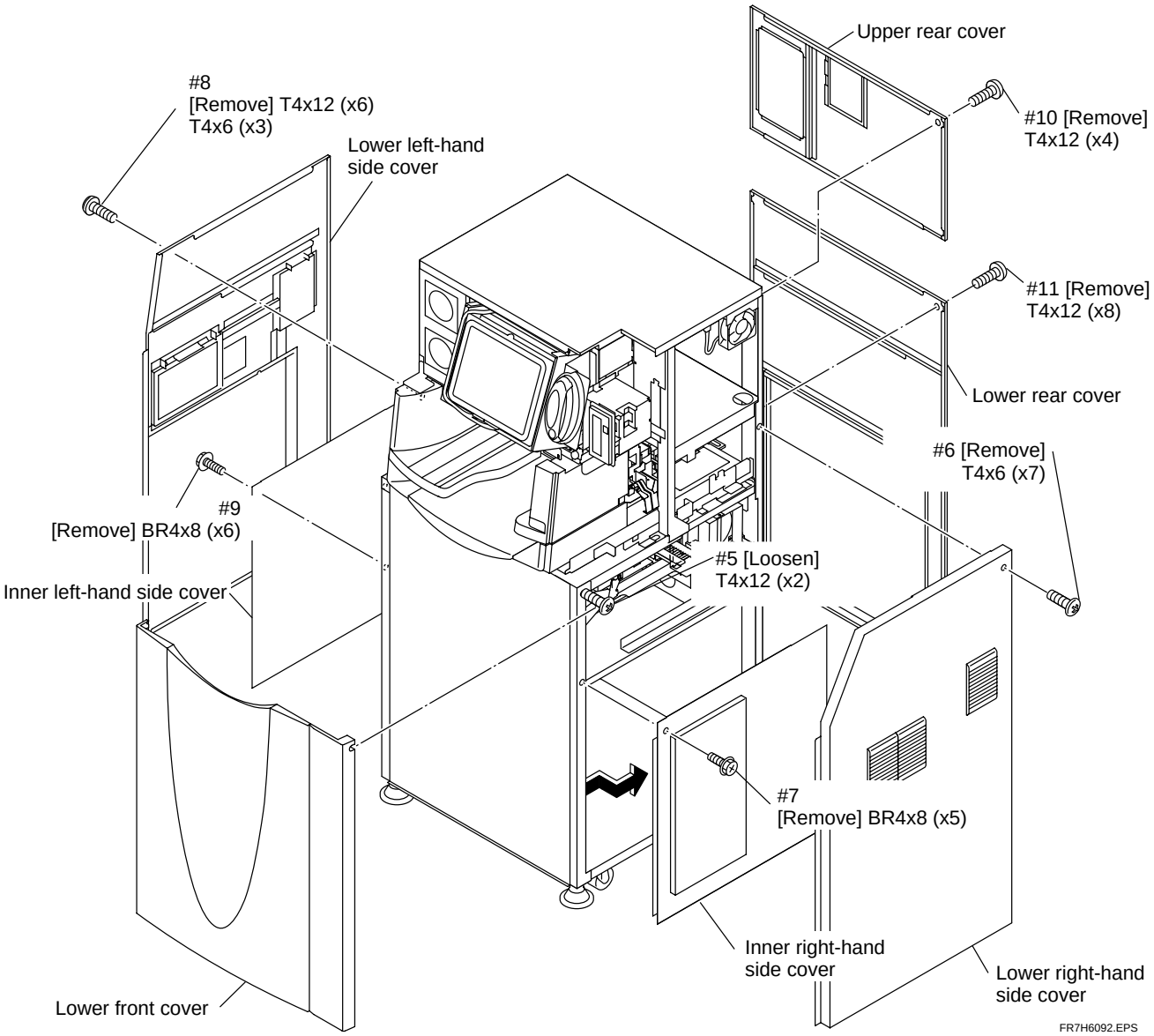
At intervals of one year, or when 60,000 IPs have been processed

→ Remove.

WARNING

In order to avoid electric shock hazards, power OFF the machine before performing any procedures.




Upper rear cover
#8
[Remove] T4x12 (x6)
T4x6 (x3)
#10 [Remove]
T4x12 (x4)
Lower left-hand
side cover
#11 [Remove]
T4x12 (x8)
Lower rear cover
#6 [Remove]
T4x6 (x7)
#9
[Remove] BR4x8 (x6)
#5 [Loosen]
T4x12 (x2)
Inner left-hand side cover
#7
[Remove] BR4x8 (x5)
Inner right-hand
side cover
Lower right-hand
side cover
Lower front cover
FR7H6092.EPS

5. Turning OFF the High-Voltage Switch

1Y

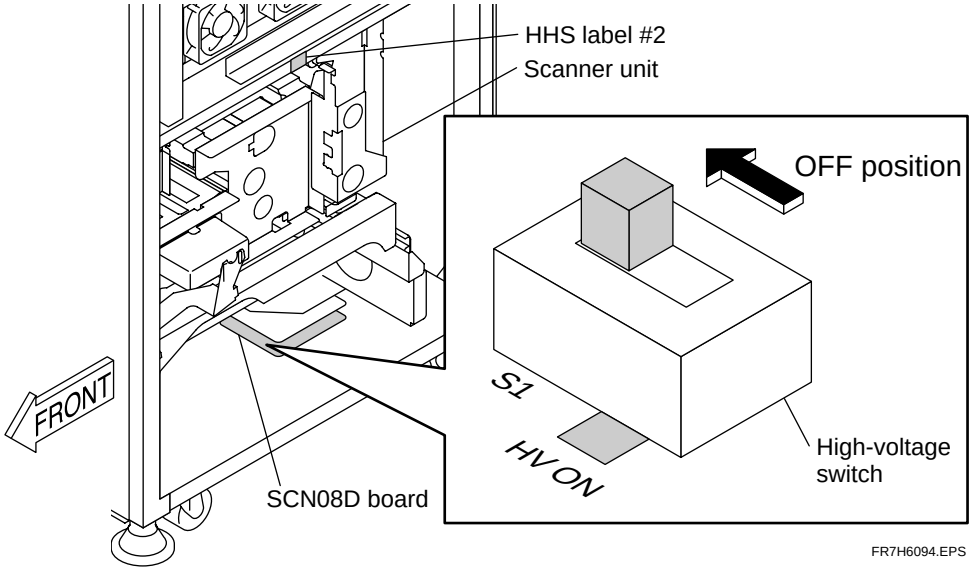
At intervals of one year, or when 60,000 IPs have been processed

→ Turn OFF.

CAUTION

Before removing the covers, be sure to turn OFF the high-voltage switch. If the machine is powered ON with any of the covers removed, the photomultiplier will be damaged.

Turn OFF the high-voltage switch (S1) of the SCN08D board.



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6. Cleaning/Replacing the Air Filters

1Y

At intervals of one year, or when 60,000 IPs have been processed

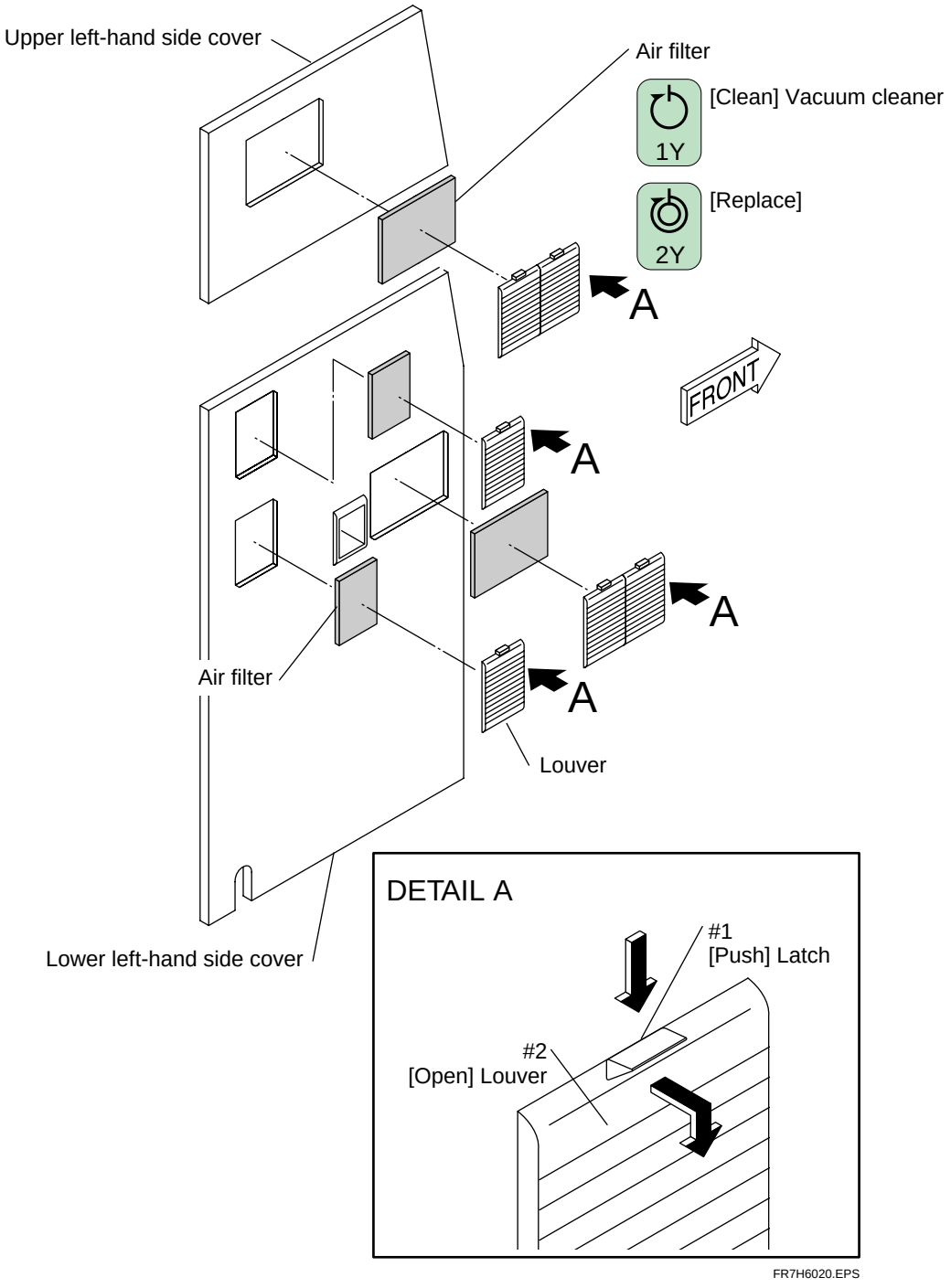
→ Clean.

2Y

At intervals of two years, or when 120,000 IPs have been processed

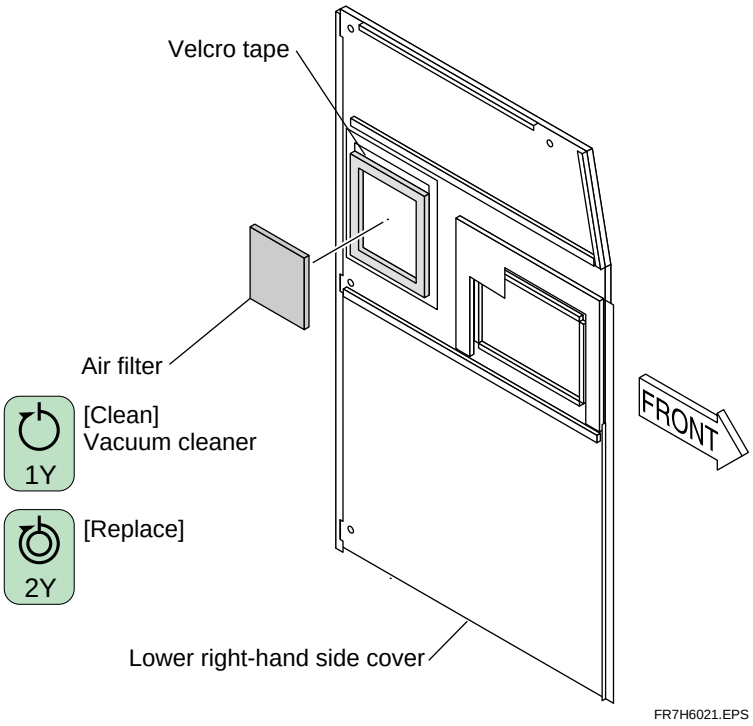
→ Replace.

■ Upper Left-Hand Side Cover and Lower Left-Hand Side Cover



FR7H6020.EPS

■ Lower Right-Hand Side Cover



7. Cassette Set Unit and IP Removal Unit

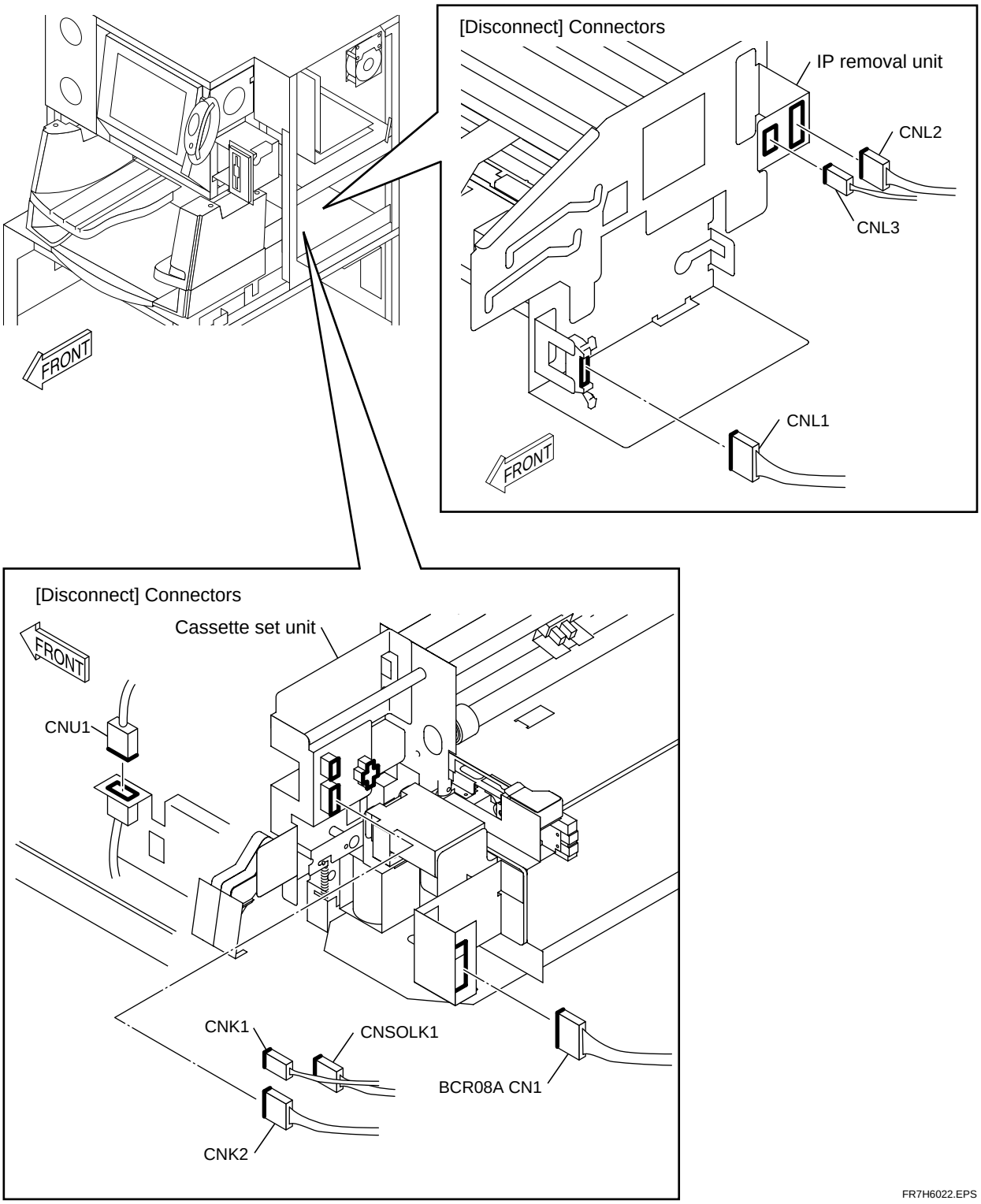
7.1 Removing the Cassette Set Unit

1Y

At intervals of one year, or when 60,000 IPs have been processed

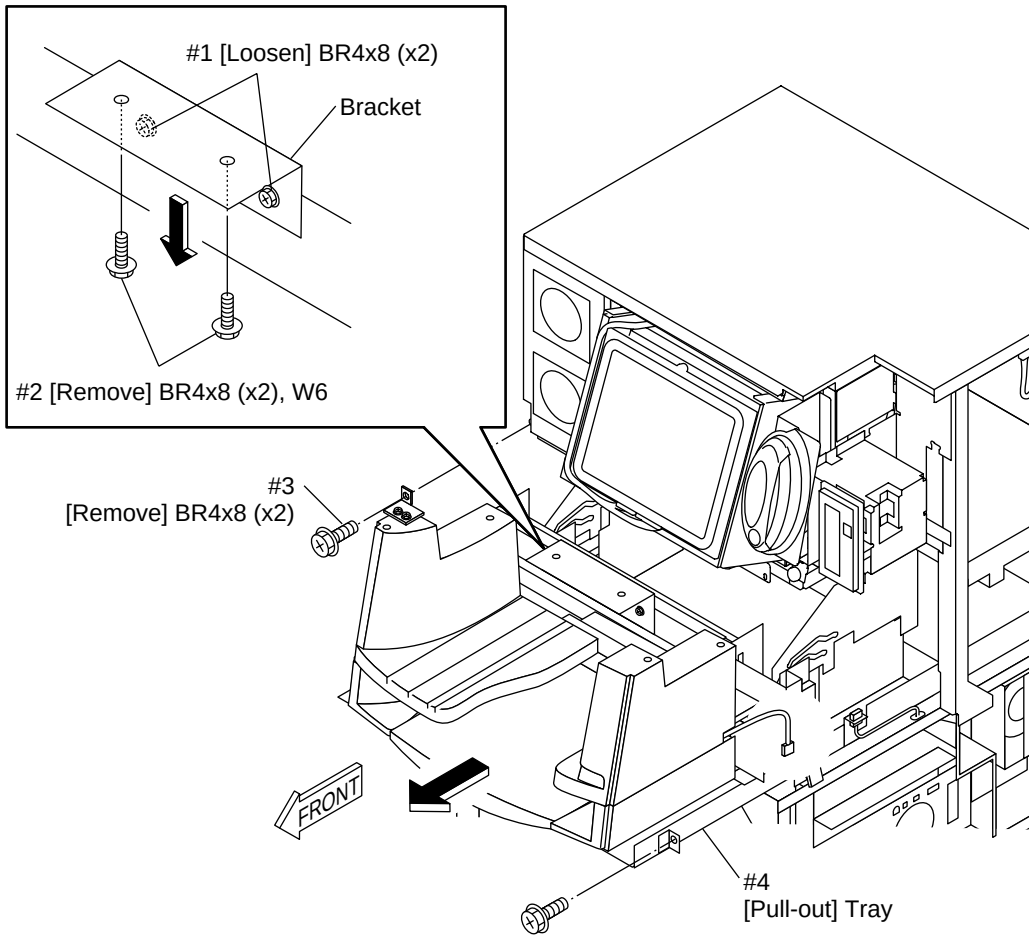
→ Remove.

(1) Disconnect the connectors.



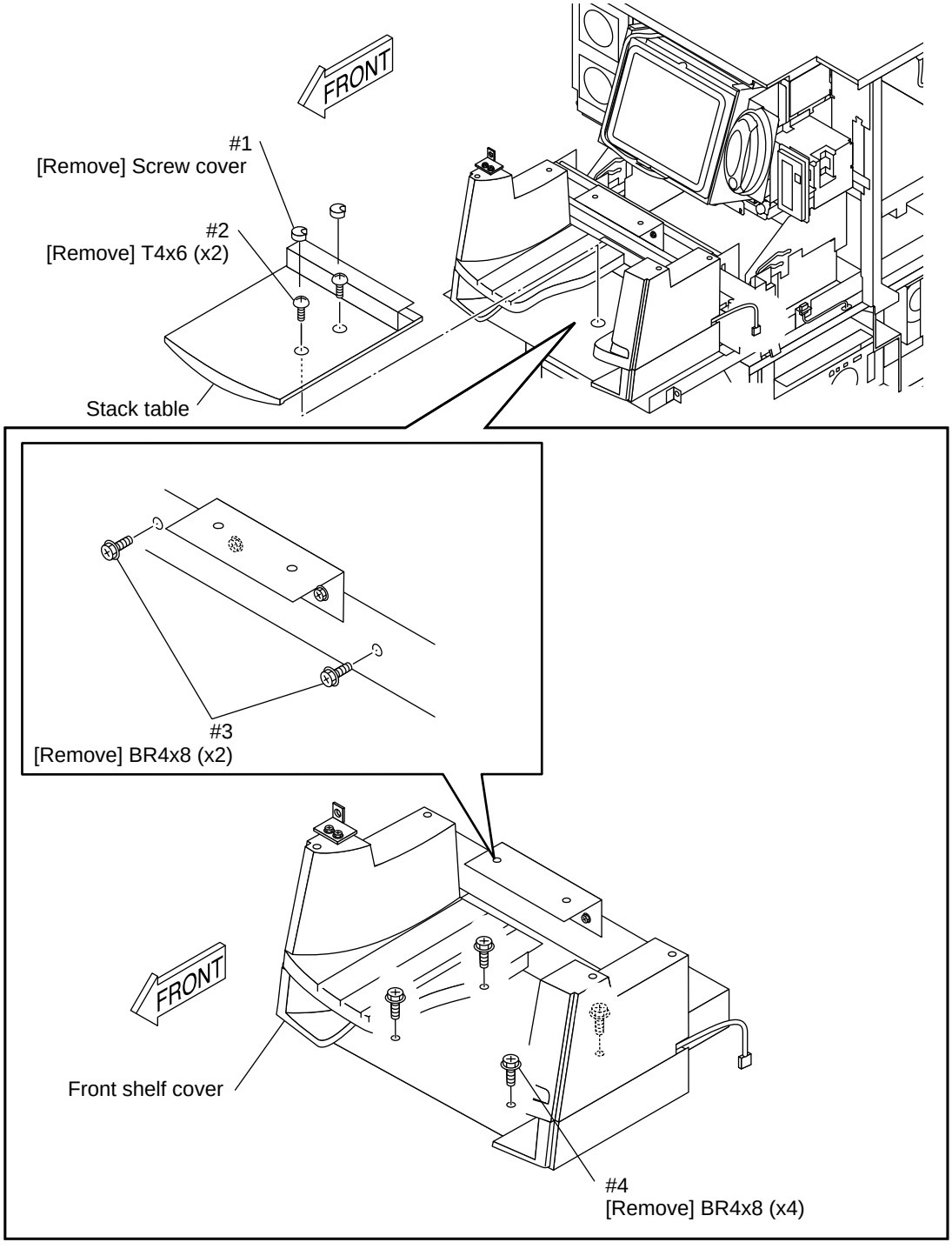
FR7H6022.EPS

(2) Pull out the tray.



FR7H6928.EPS

(3) Remove the front shelf cover.

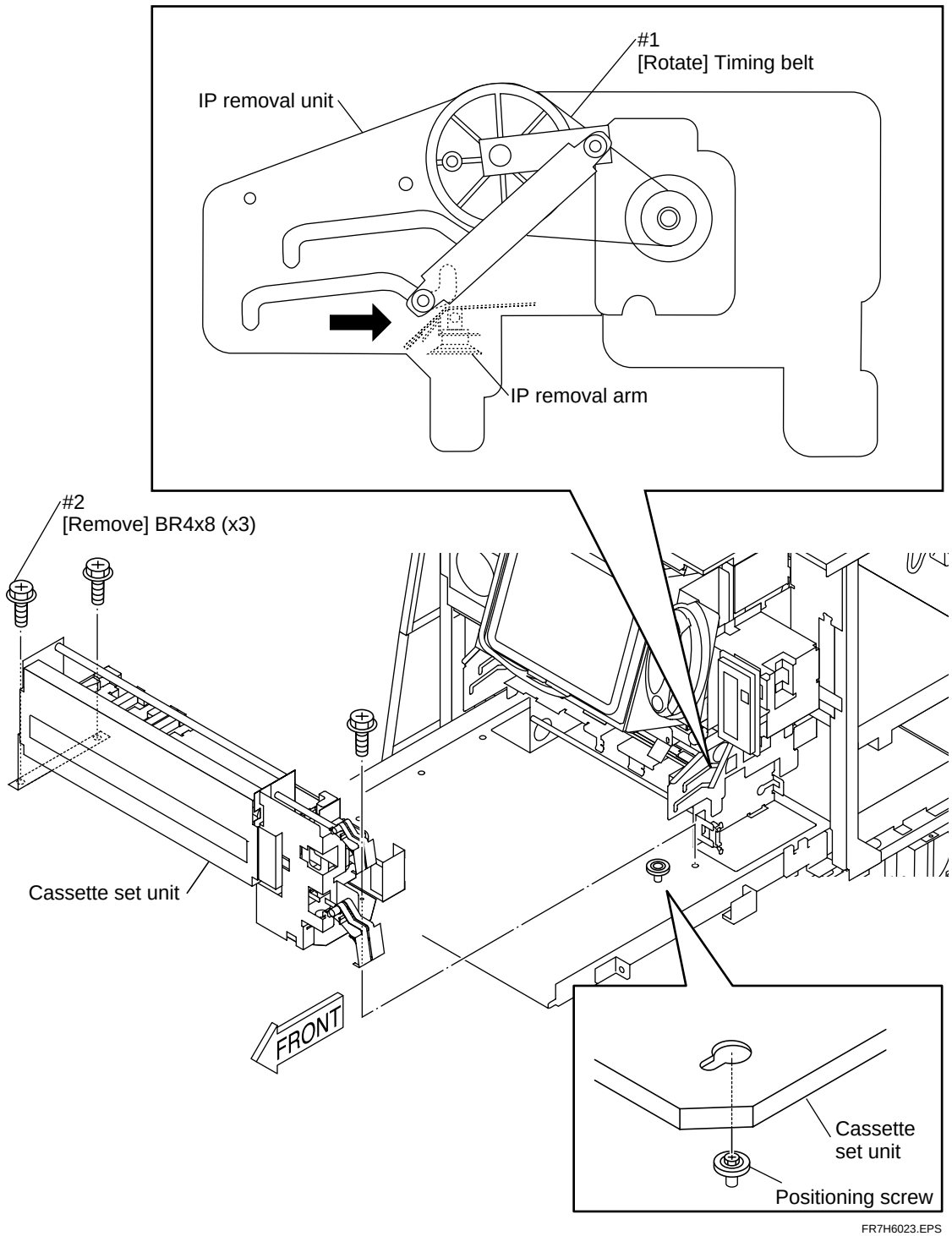


FR7H6093.EPS

(4) Remove the cassette set unit.

◆ ***NOTE*** ◆

To remove the cassette set unit, move the IP removal arm to the position shown in the illustration below.



FR7H6023.EPS

7.2 IP Removal Unit (Cleaning the Suction Cups)

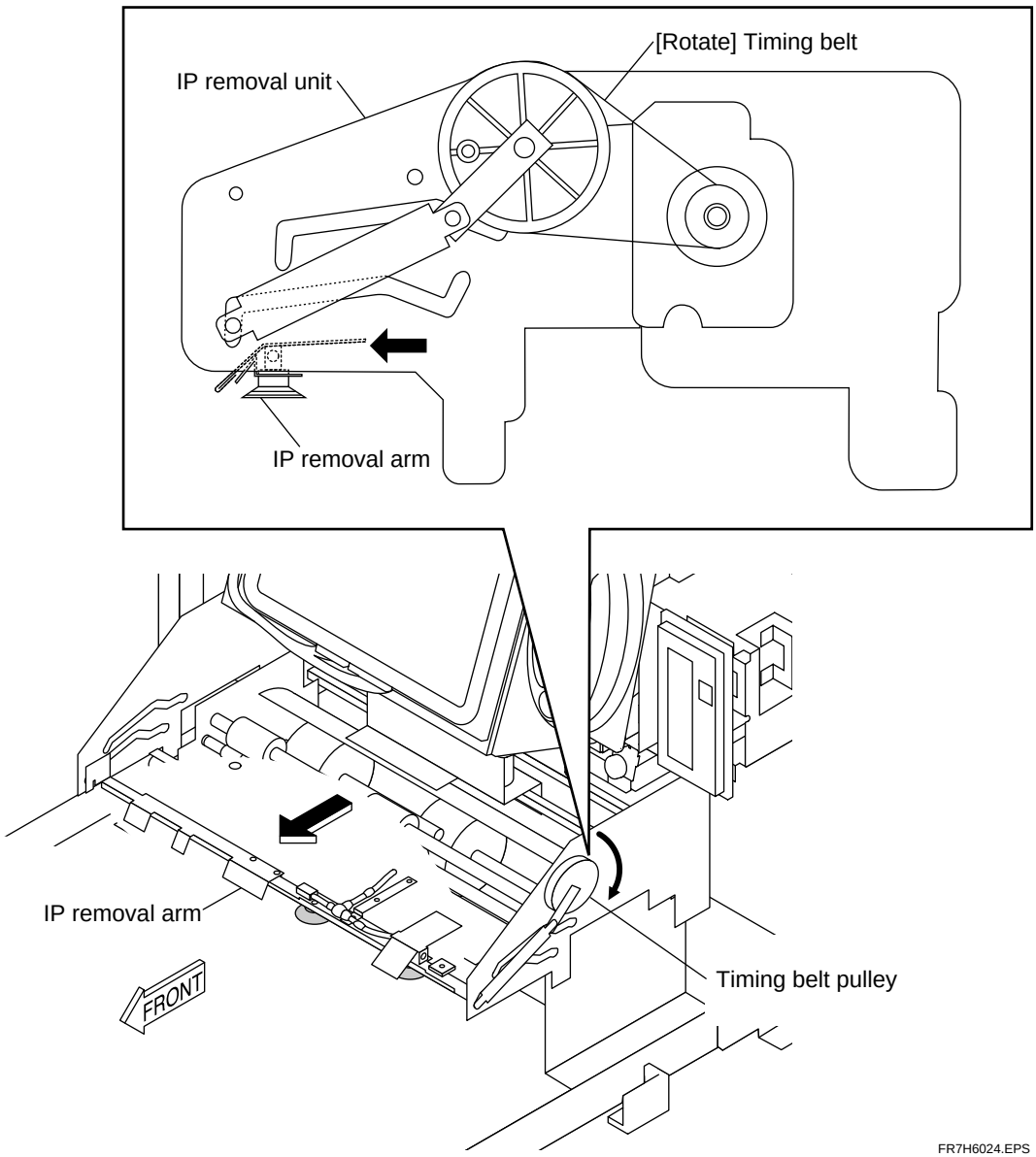
1Y

At intervals of one year, or when 60,000 IPs have been processed → Clean.

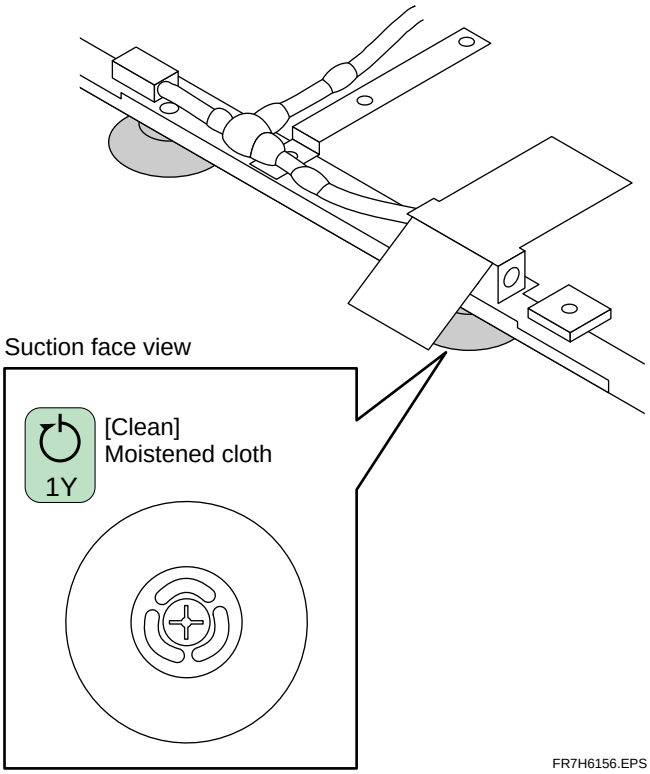
◆ ***NOTE*** ◆

To clean the suction cups, move the IP removal arm to the position shown in the illustration below.

(1) Pull out the IP removal arm toward the front.



(2) Clean the suction cups.



(3) Put the IP removal arm back toward the rear.

7.3 IP Removal Unit (Cleaning/Replacing the Rubber Rollers Located Under the IP Removal Arm and Shock Absorber-Attached Guide Plates)

1Y

At intervals of one year, or when 60,000 IPs have been processed

→ Clean the rubber rollers and shock absorber-attached guide plates.

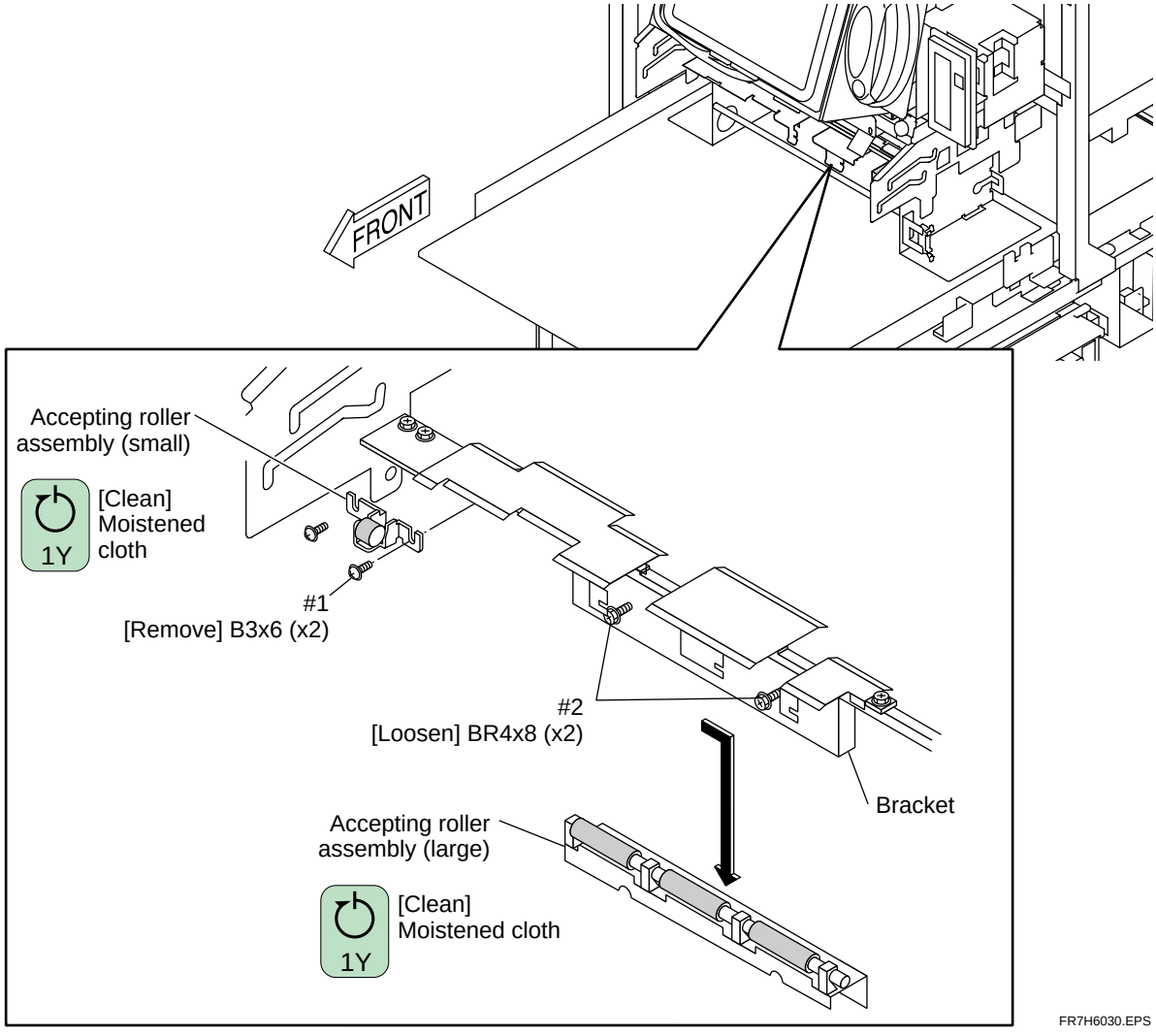
3Y

At intervals of three years, or when 180,000 IPs have been processed

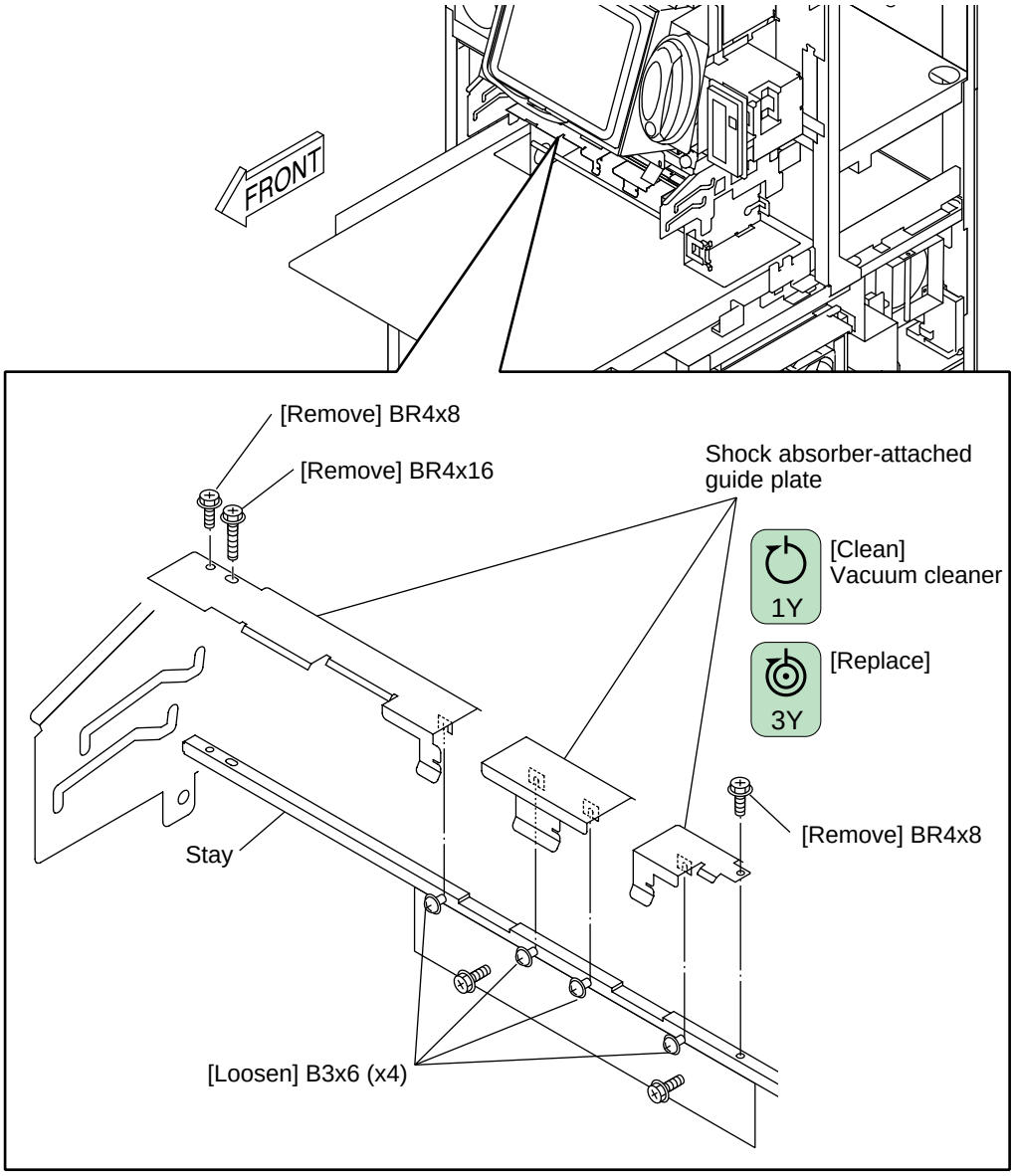
→ Replace the shock absorber-attached guide plates.

(1) Remove the accepting roller assemblies (small and large).

(2) Clean the rubber rollers.



(3) Clean or replace the shock absorber-attached guide plates.

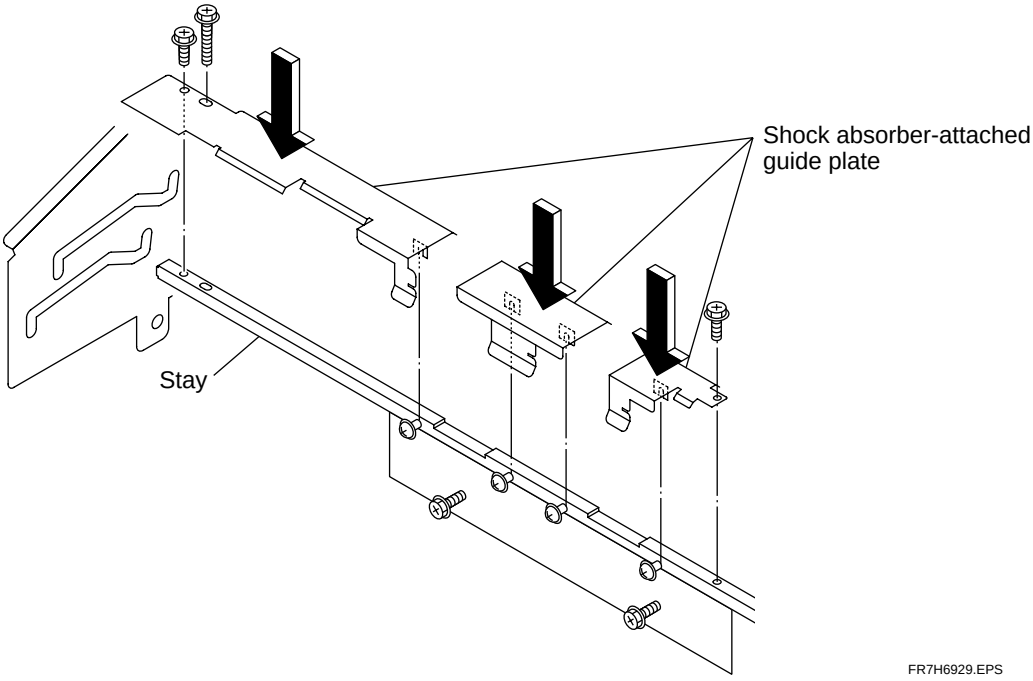


FR7H6031.EPS

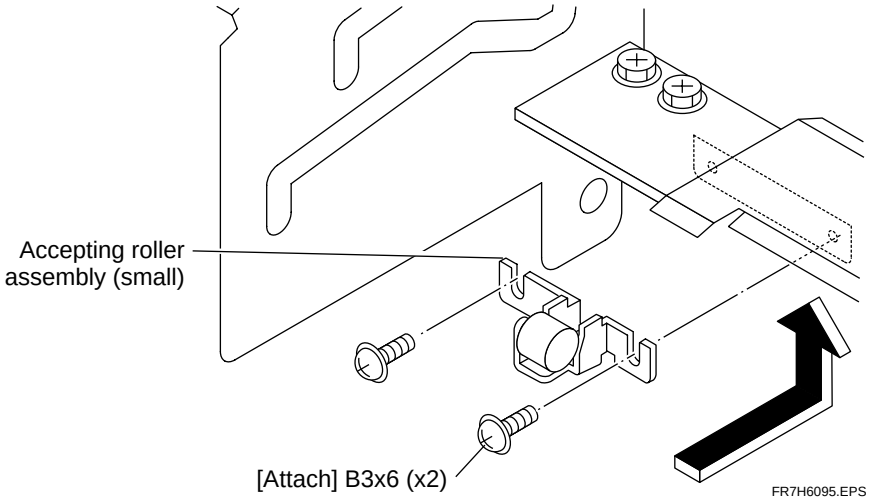
(4) By reversing the procedures of step (1), reinstall the accepting roller assemblies (small and large).

◆ ***CHECKS*** ◆

• There should be no gap between the shock absorber-attached guide plates and the stay.



• The accepting roller assembly (small) should be aligned upward and secured in place.



7.4 IP Removal Unit (Cleaning/Replacing the Shock Absorber-Attached Guide Plates Located Under the IP Removal Unit)

1Y

At intervals of one year, or when 60,000 IPs have been processed

→ Clean.

3Y

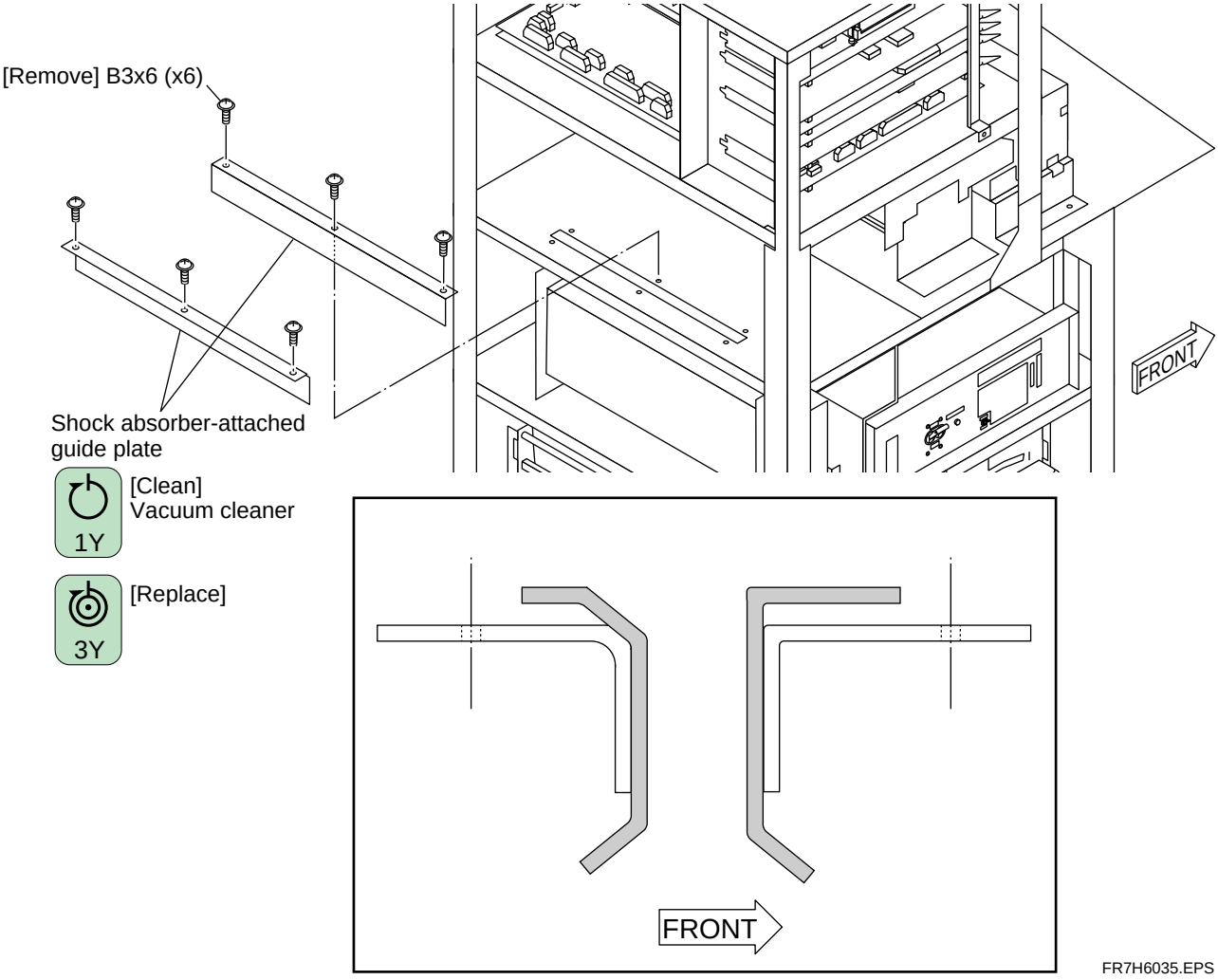
At intervals of three years, or when 180,000 IPs have been processed

→ Replace.

Clean or replace the shock absorber-attached guide plates.

◆ ***NOTE*** ◆

Use care not to let the shock absorber-attached guide plate fall into the conveyance path within the machine.



7.5 IP Removal Unit (Cleaning/Replacing the Shock Absorber-Attached Guide Plates in the Conveyance Path of the IP Removal Unit)

1Y

At intervals of one year, or when 60,000 IPs have been processed

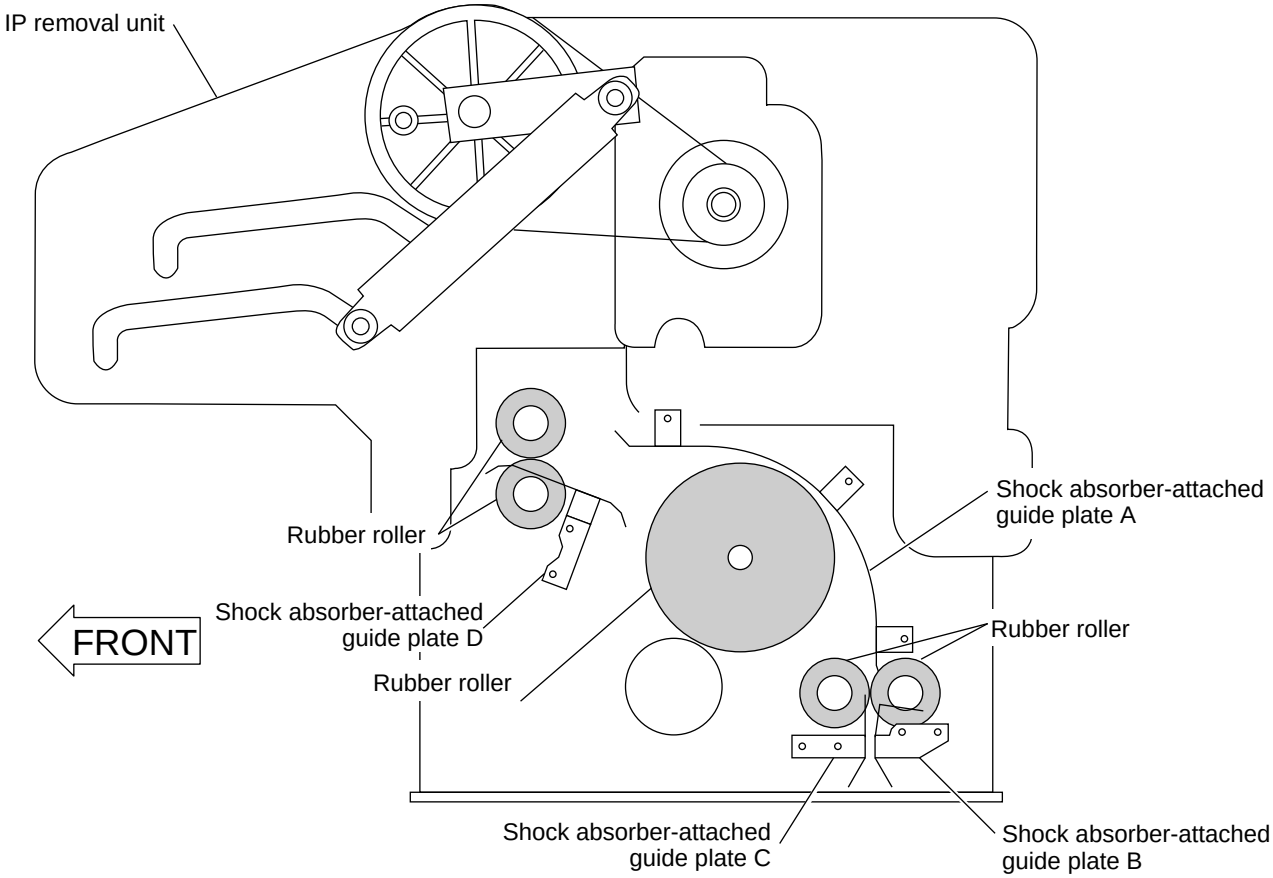
→ Clean the rubber rollers and shock absorber-attached guide plates.

3Y

At intervals of three years, or when 180,000 IPs have been processed

→ Replace the shock absorber-attached guide plates.

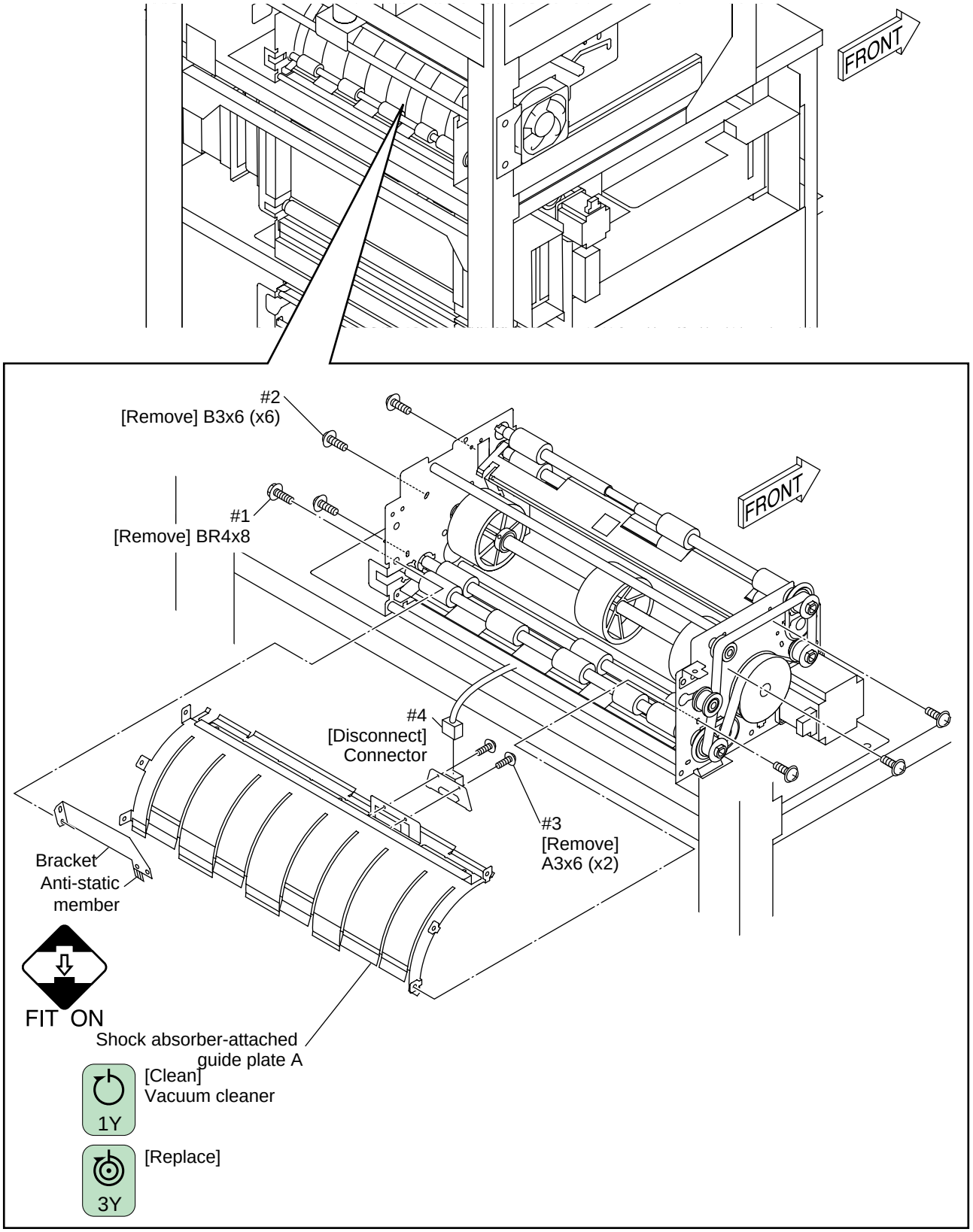
■ Locations of Shock Absorber-Attached Guide Plates and Rubber Rollers



FR7H6096.EPS

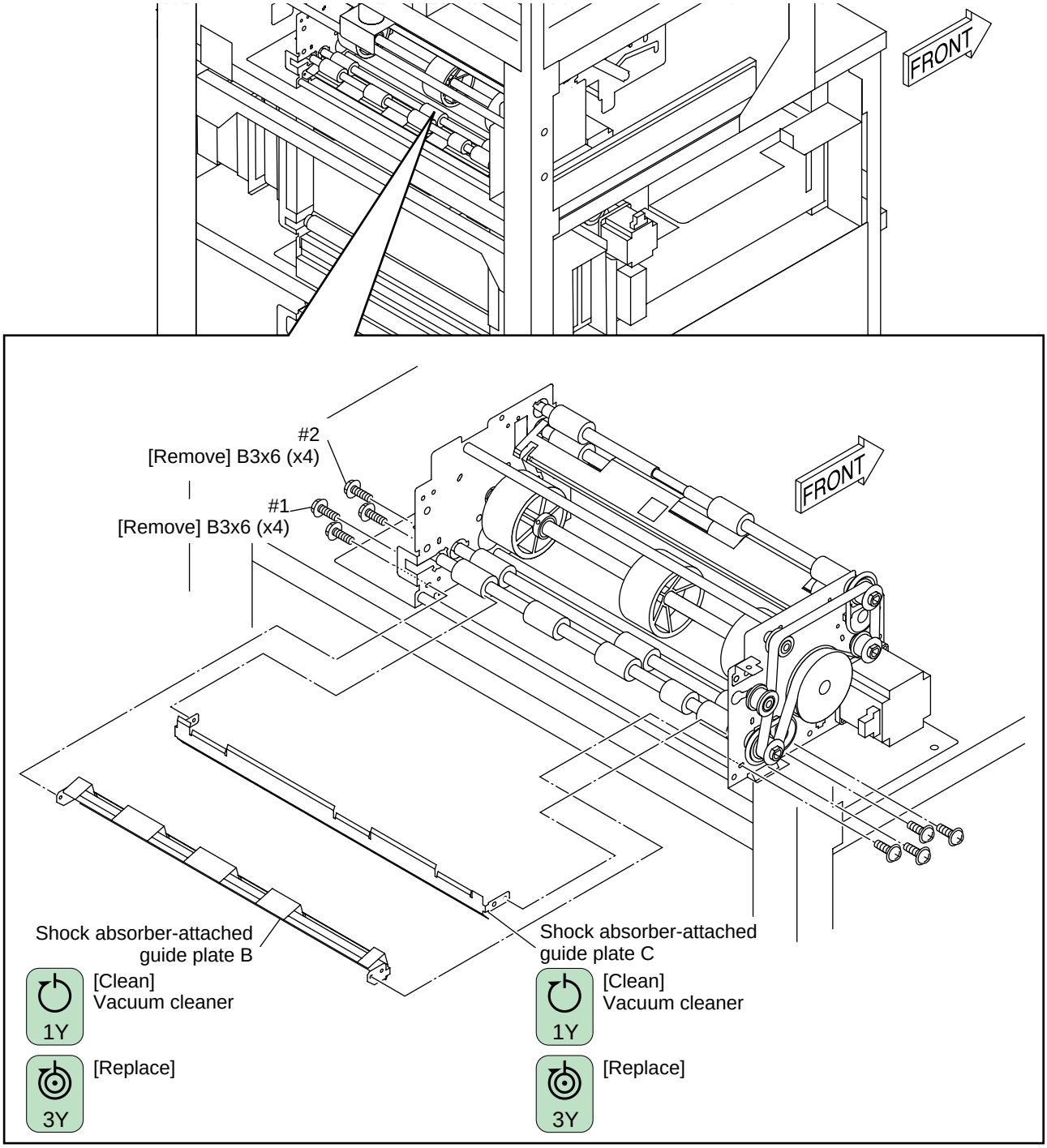
■ Cleaning/Replacement Procedures

(1) Remove the shock absorber-attached guide plate A.



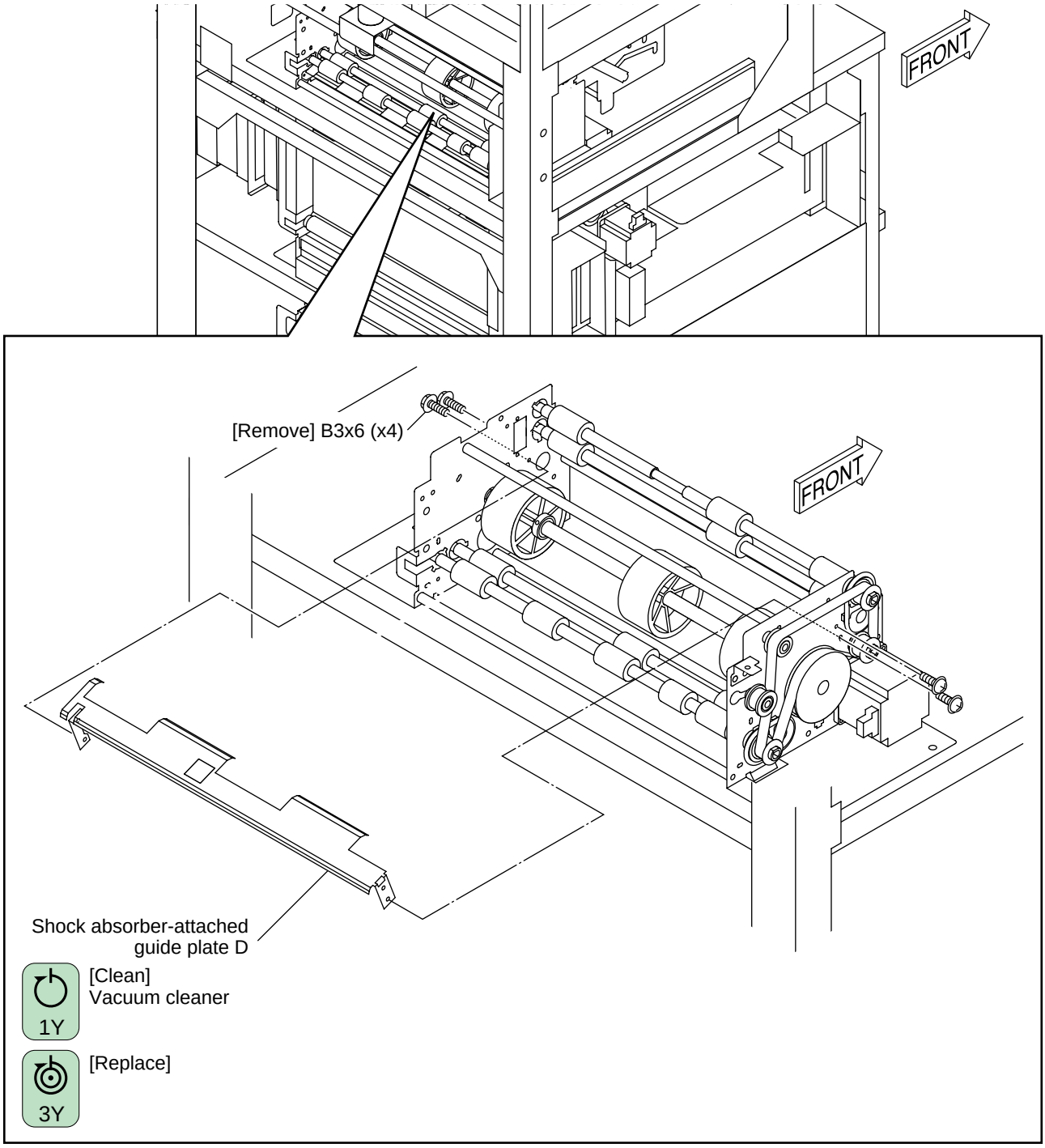
FR7H6097.EPS

(2) Remove the shock absorber-attached guide plates B and C.



FR7H6098.EPS

(3) Remove the shock-absorber-attached guide plate D.



FR7H6150.EPS

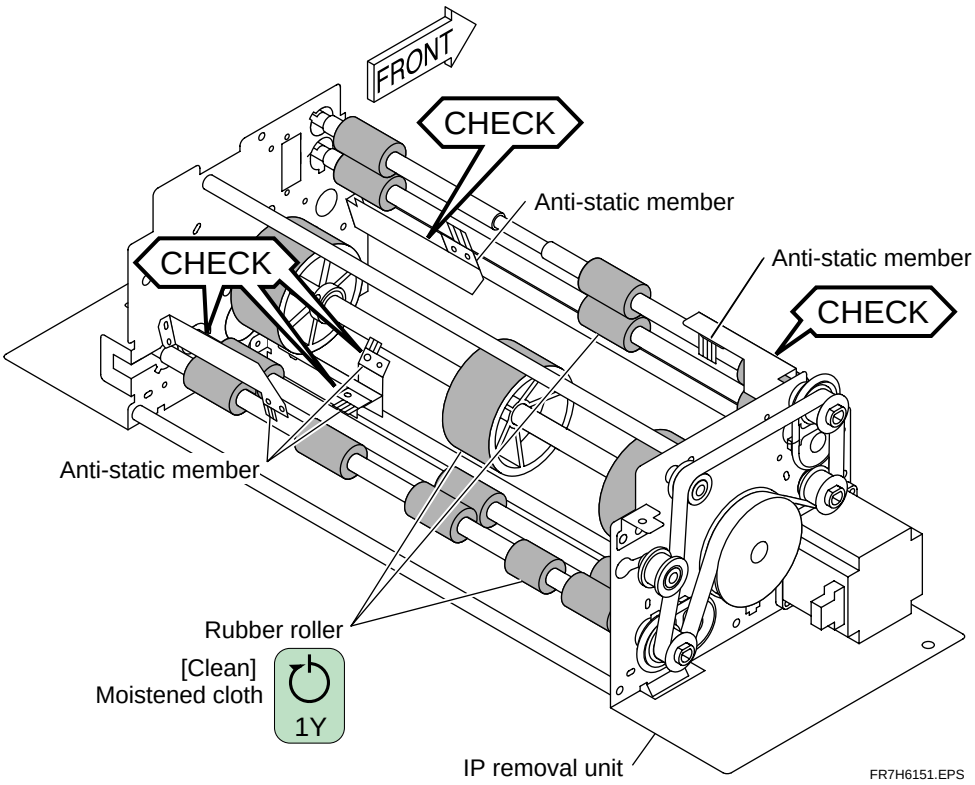
7.6 IP Removal Unit (Cleaning the Rubber Rollers)

1Y

At intervals of one year, or when 60,000 IPs have been processed → Clean.

(1) Clean the rubber rollers.

(2) By reversing the procedures described in “7.5 IP Removal Unit (Cleaning/Replacing the Shock Absorber-Attached Guide Plates in the Conveyance Path of the IP Removal Unit),” reinstall the shock absorber-attached guide plates A, B, C, and D.



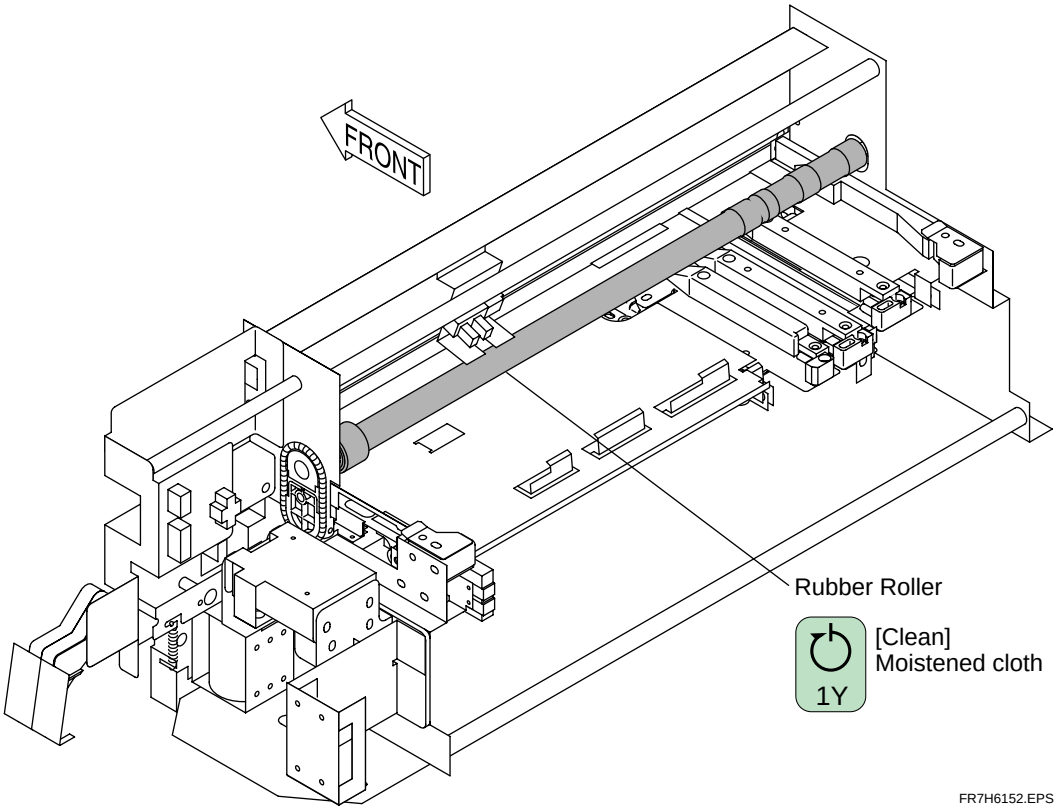
◆ *CHECK* ◆

Make sure that the anti-static members are brought into contact with the rollers.

7.7 Cassette Set Unit (Cleaning the Rubber Roller)

1Y

At intervals of one year, or when 60,000 IPs have been processed → Clean.



7.8 Installing the Cassette Set Unit

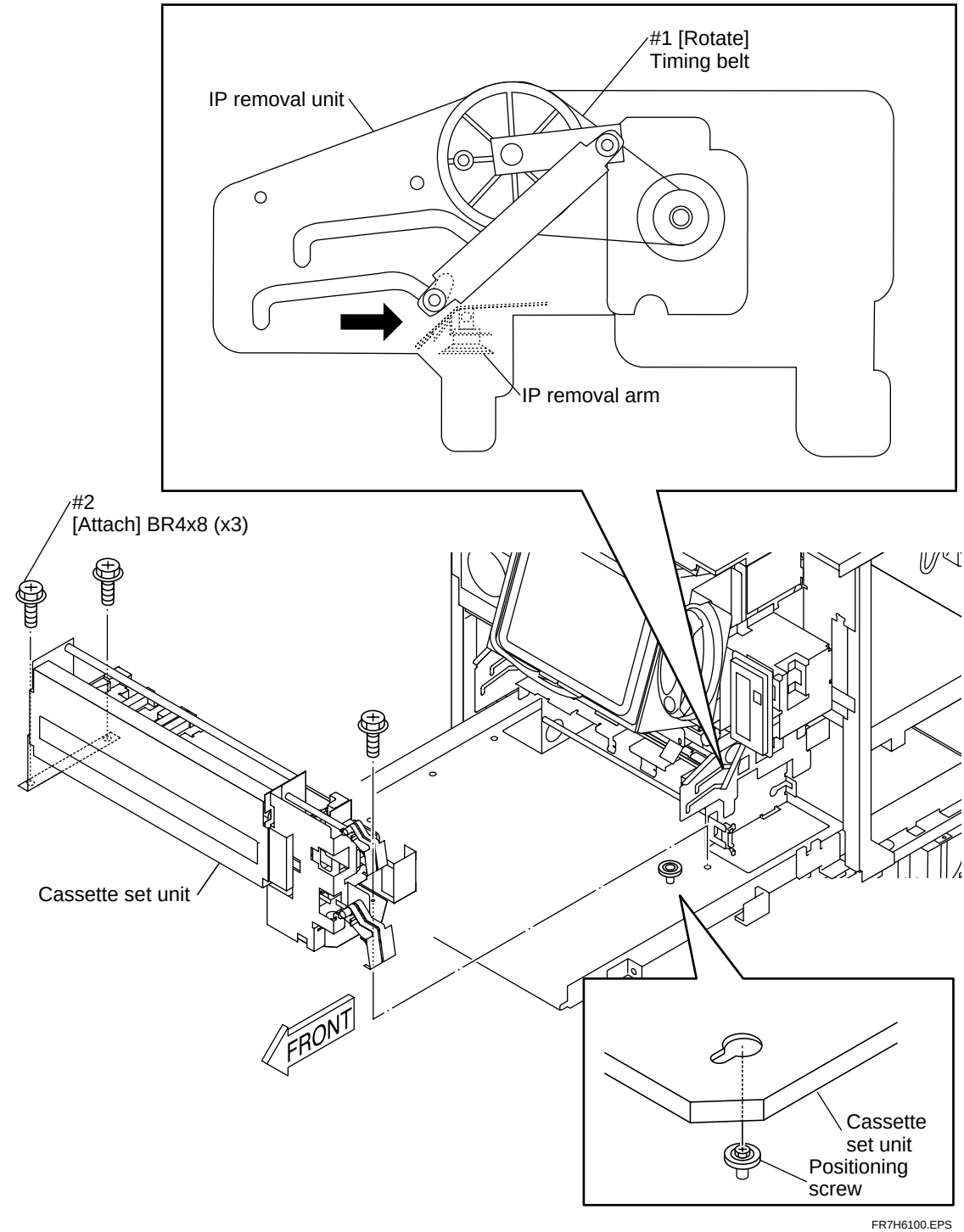
1Y

At intervals of one year, or when 60,000 IPs have been processed → Install.

◆ *NOTE* ◆

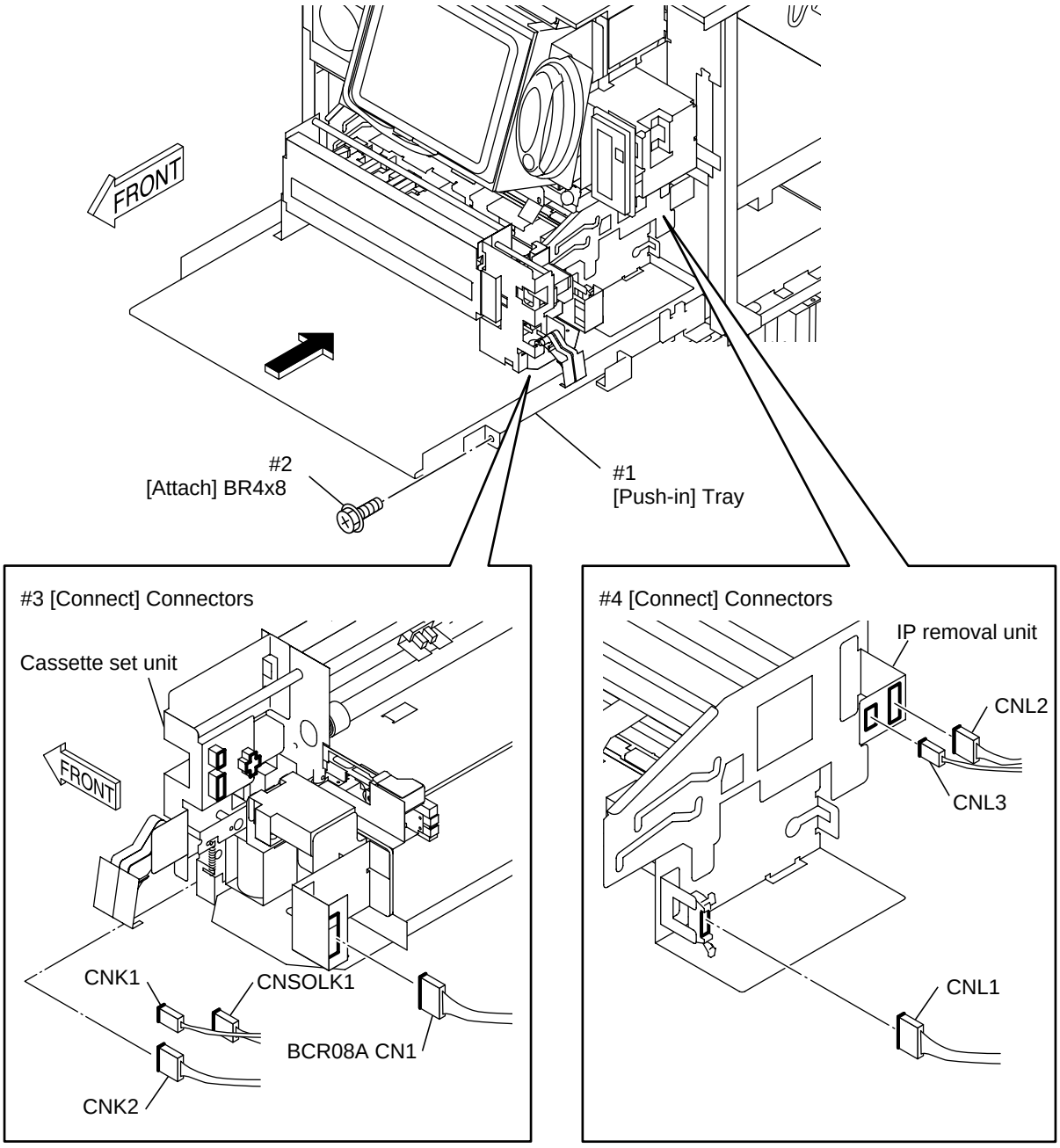
To install the cassette set unit, move the IP removal arm to the position shown in the illustration below.

(1) Install the cassette set unit.



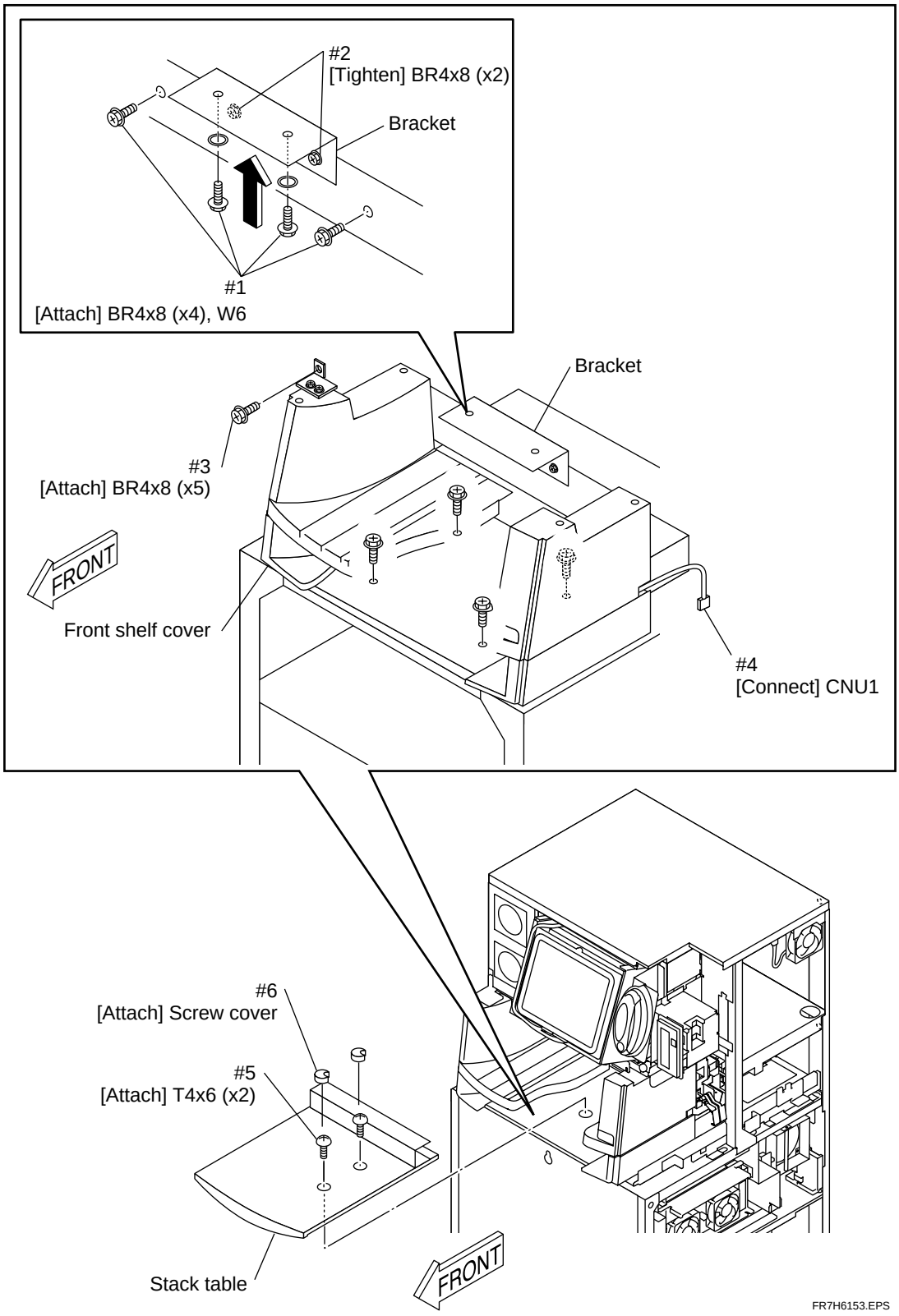
FR7H6100.EPS

(2) Push in the tray.



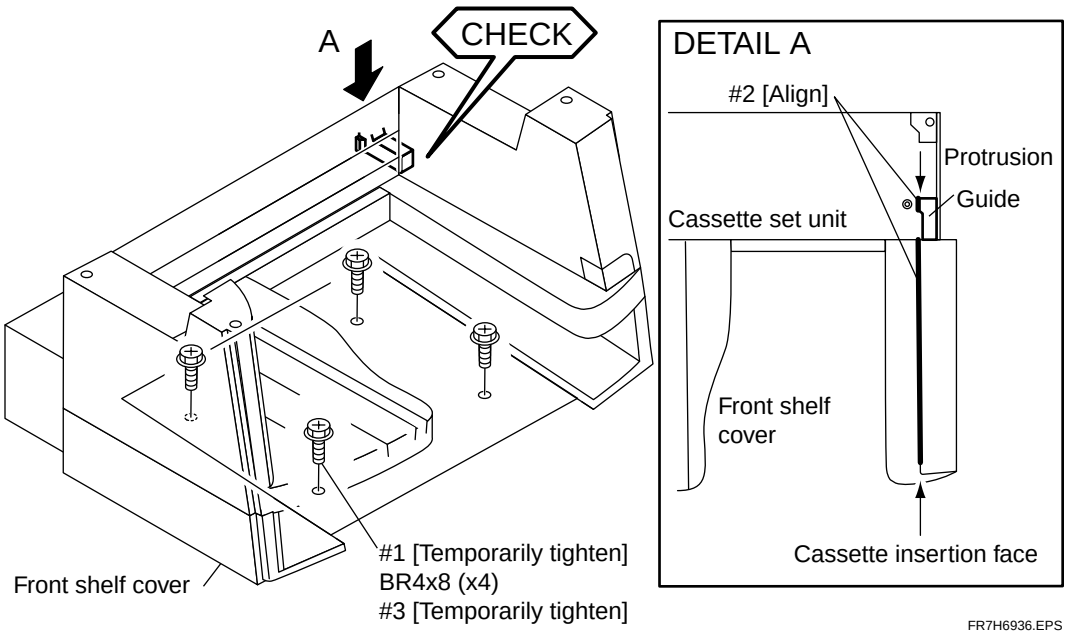
FR7H6099.EPS

(3) Install the front shelf cover.



◆ ***NOTE*** ◆

When installing the front shelf cover, align the cassette insertion face of the front shelf cover to the guide protrusion of the cassette set unit.
If they are not aligned, a cassette hold failure may result.



◆ ***CHECK*** ◆

Power ON the machine and make sure that a cassette hold failure does not occur when a cassette is inserted.

8. Erasure Conveyor

8.1 Removing the Erasure Conveyor

1Y

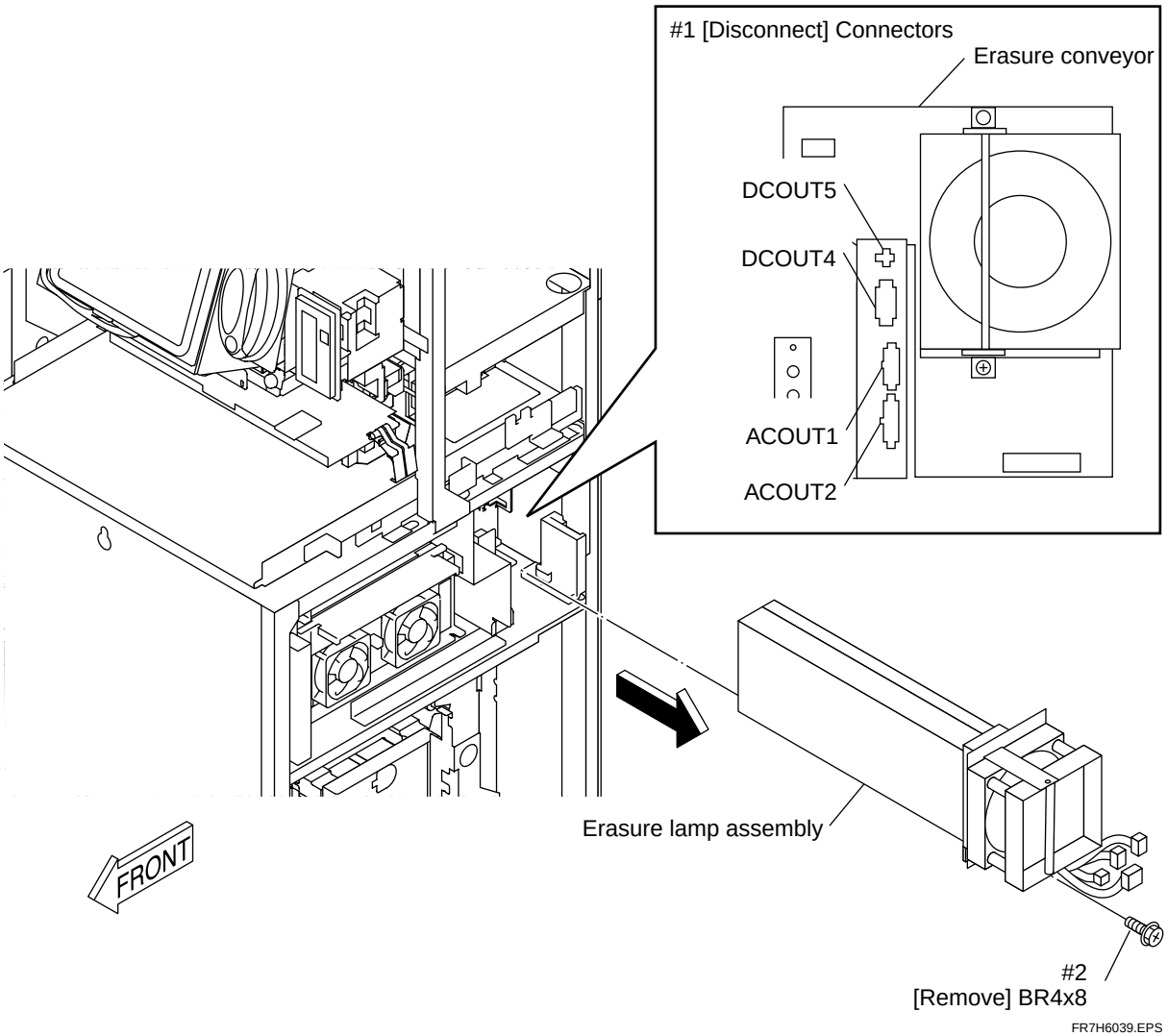
At intervals of one year, or when 60,000 IPs have been processed

→ Remove.

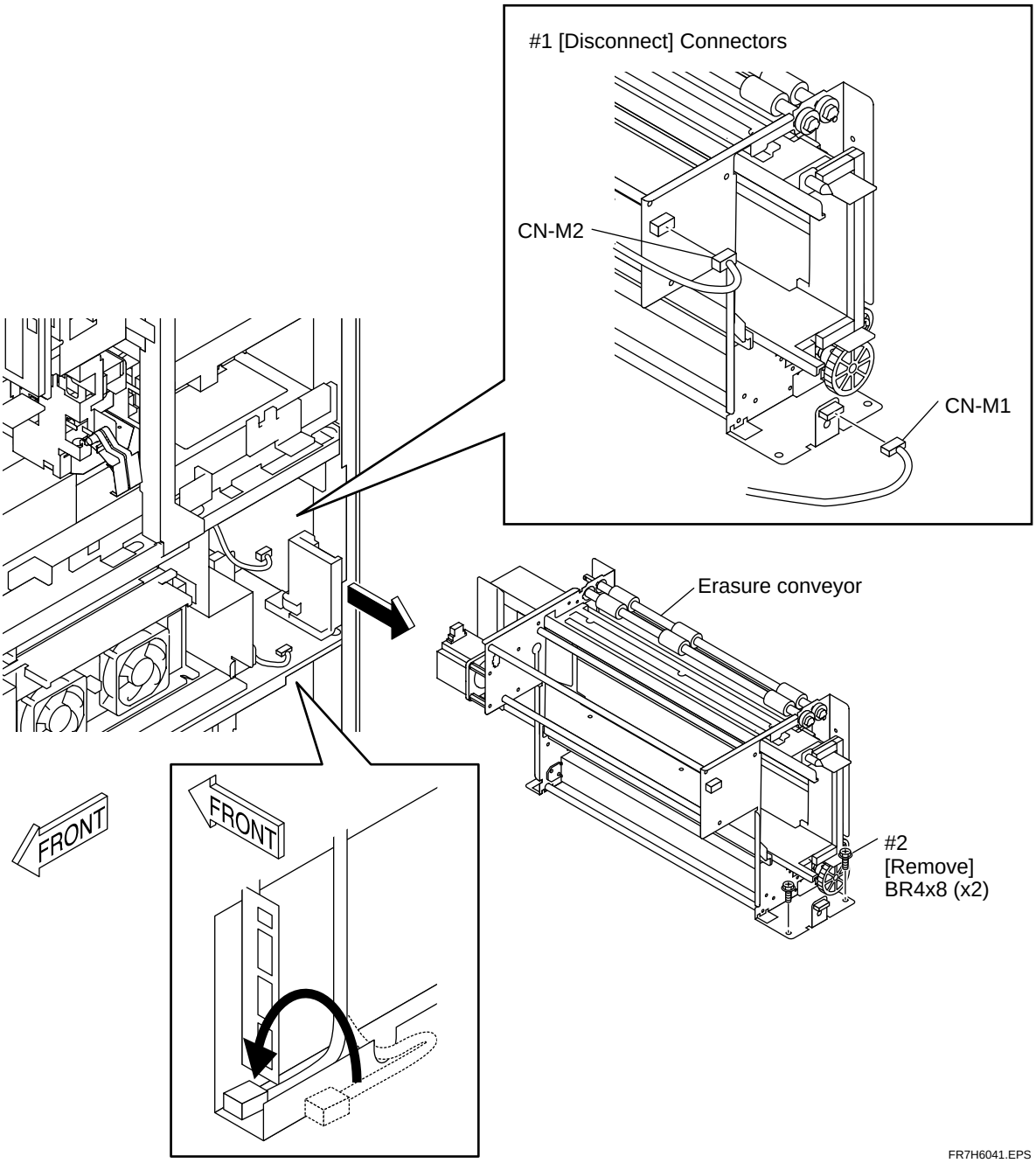
◆ *NOTE* ◆

The erasure lamp should be handled carefully. If it is hit, the erasure lamp may be broken, so you may get injured.

(1) Remove the erasure lamp assembly.



(2) Remove the erasure conveyor.



8.2 Erasure Conveyor (Cleaning/Replacing the Erasure Lamps)

1Y

At intervals of one year, or when 60,000 IPs have been processed

→ Clean.

2Y

At intervals of two years, or when 120,000 IPs have been processed

→ Replace.

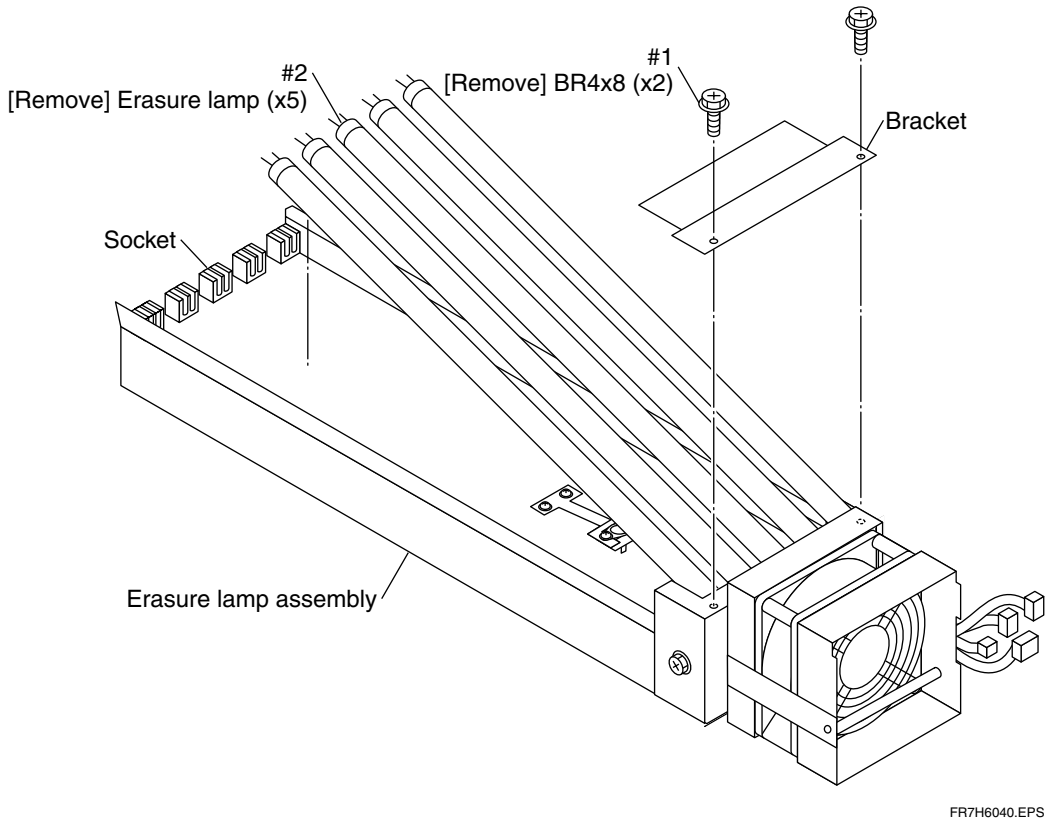
CAUTION

Since the erasure lamp may be heated to a high temperature, exercise care not to suffer burns.

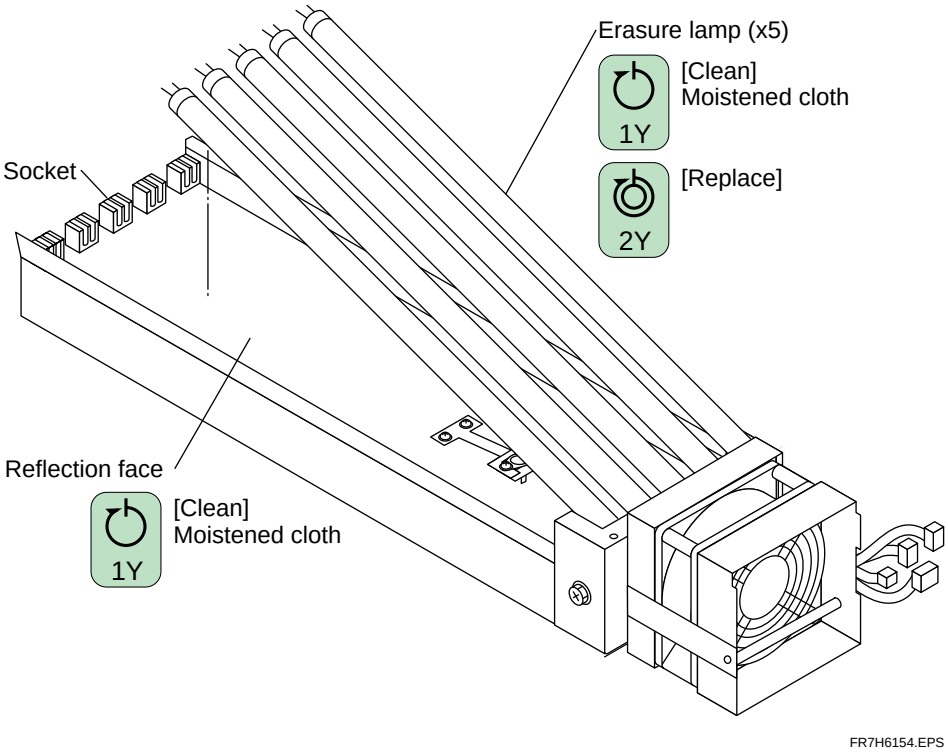
(1) Remove the five erasure lamps.

◇ ***REFERENCE*** ◇

To remove the erasure lamp, hold the end (metal portion) of the erasure lamp, and initially snap the left side of the erasure lamp out of the socket.



(2) Clean the reflection face within the erasure lamp assembly and the five erasure lamps, or replace the five erasure lamps.



(3) By reversing the procedures of step (1), reinstall the erasure lamps.

8.3 Erasure Conveyor (Cleaning/Replacing the Cleaning Rollers)

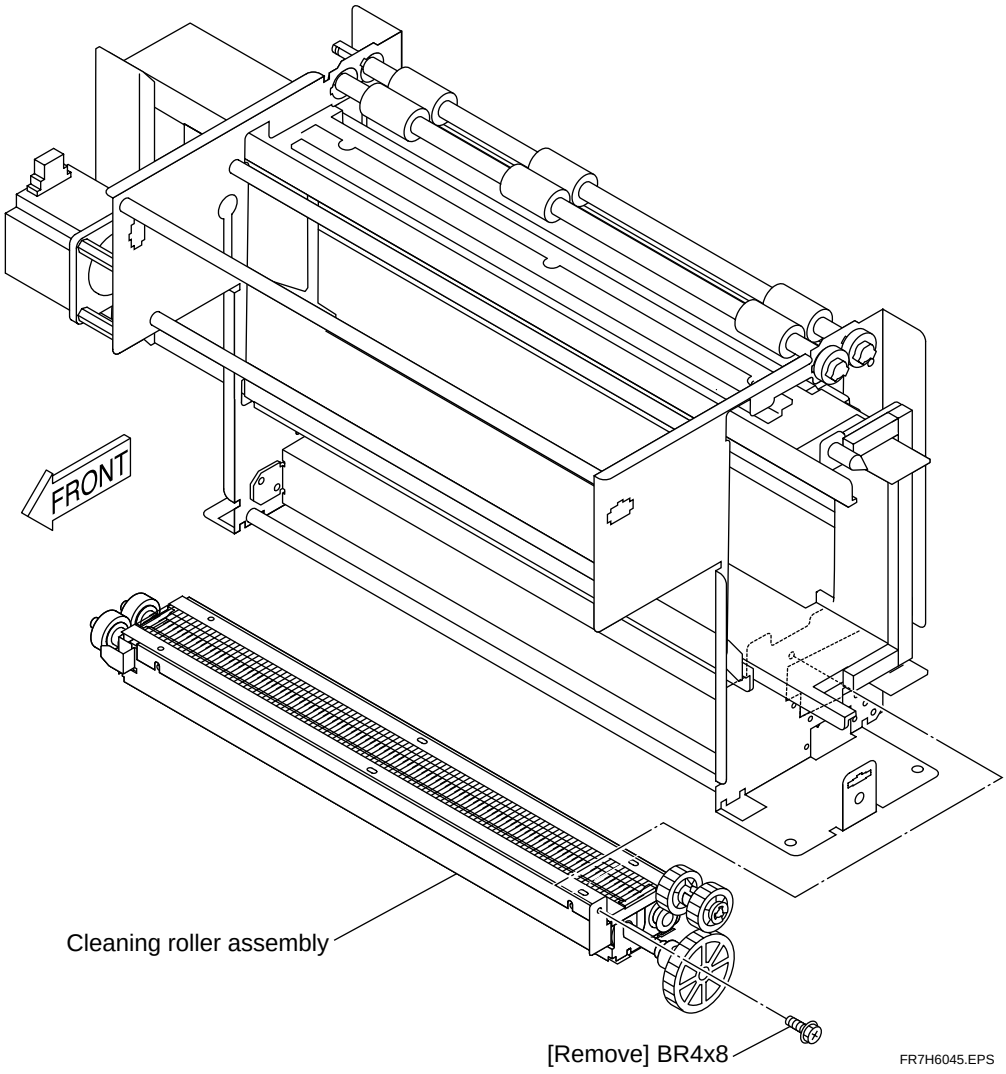
1Y

At intervals of one year, or when 60,000 IPs have been processed → Clean.

2Y

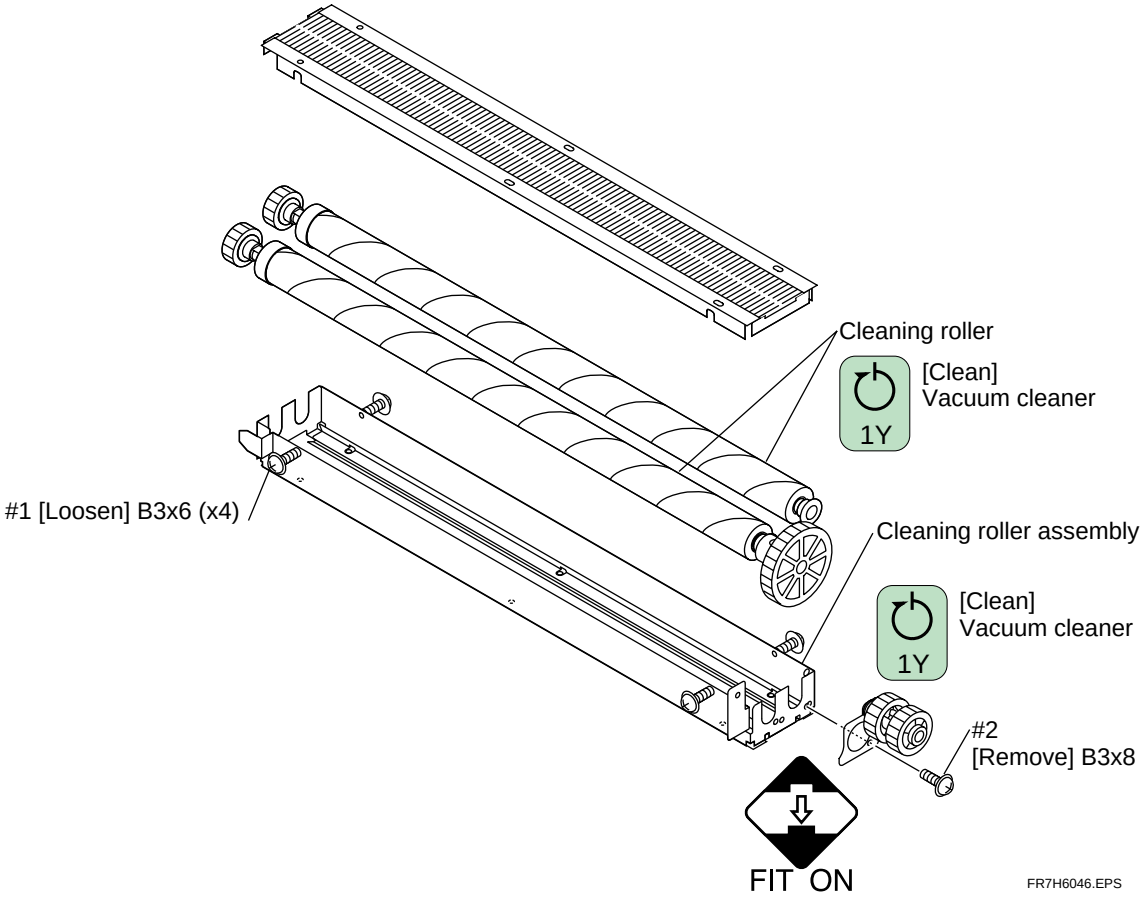
At intervals of two years, or when 120,000 IPs have been processed → Replace.

(1) Remove the cleaning roller assembly.

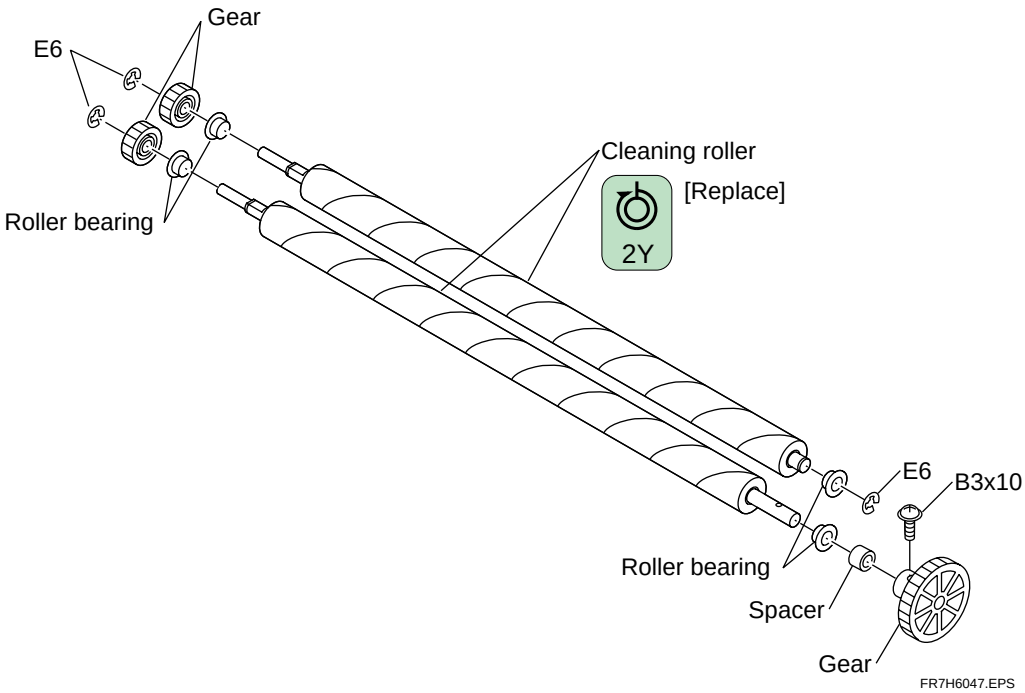


(2) Clean the cleaning rollers and inside the cleaning roller assembly, or replace the cleaning rollers.

<Cleaning the cleaning rollers and inside the cleaning roller assembly>



<Replacing the cleaning rollers>



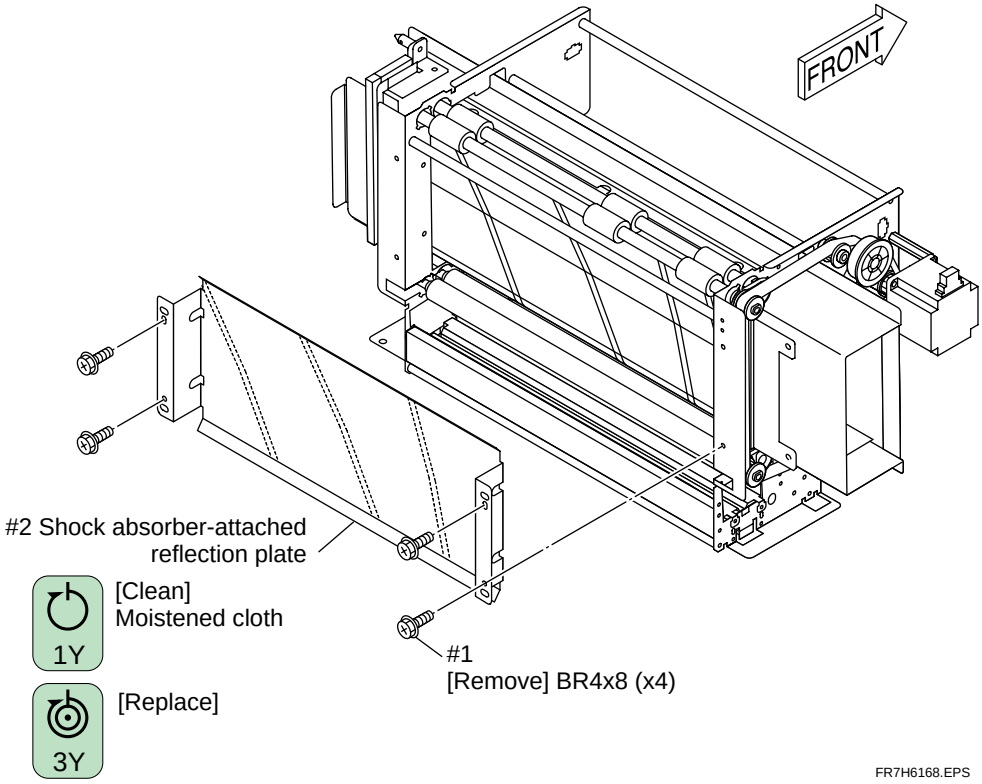
8.4 Erasure Conveyor (Cleaning/Replacing the Shock Absorber-Attached Reflection Plate)

1Y

At intervals of one year, or when 60,000 IPs have been processed → Clean.

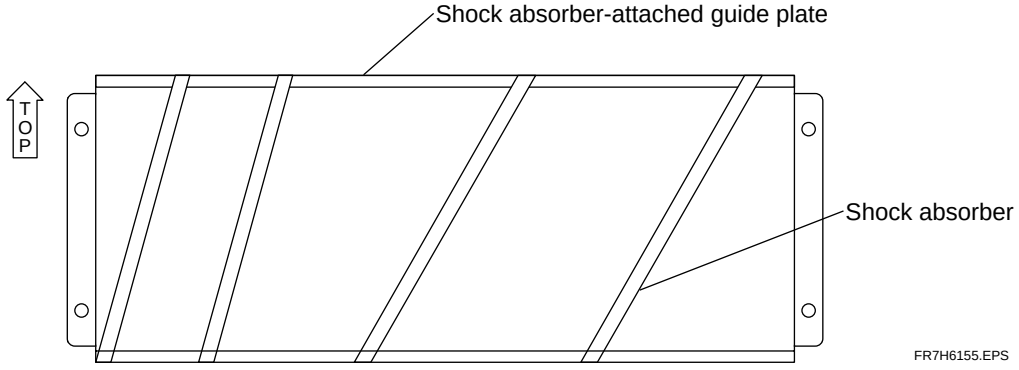
3Y

At intervals of three years, or when 180,000 IPs have been processed → Replace.



◆ ***NOTE*** ◆

When cleaning the shock absorber-attached reflection plate with a moistened cloth, use care not to touch the shock absorber.



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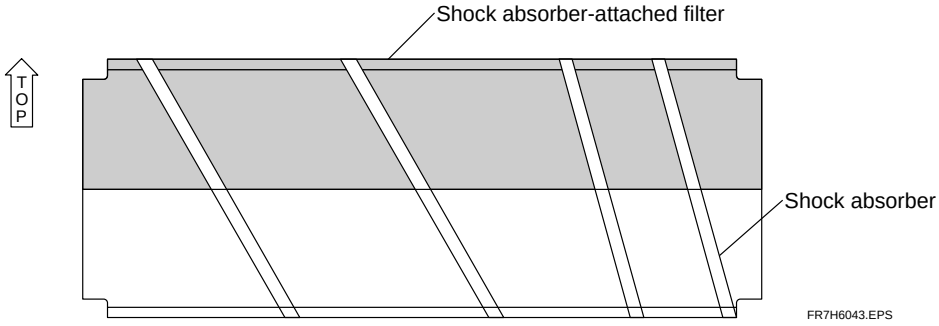
8.5 Erasure Conveyor (Cleaning/Replacing the Shock Absorber-Attached Filter)

1Y — At intervals of one year, or when 60,000 IPs have been processed → Clean

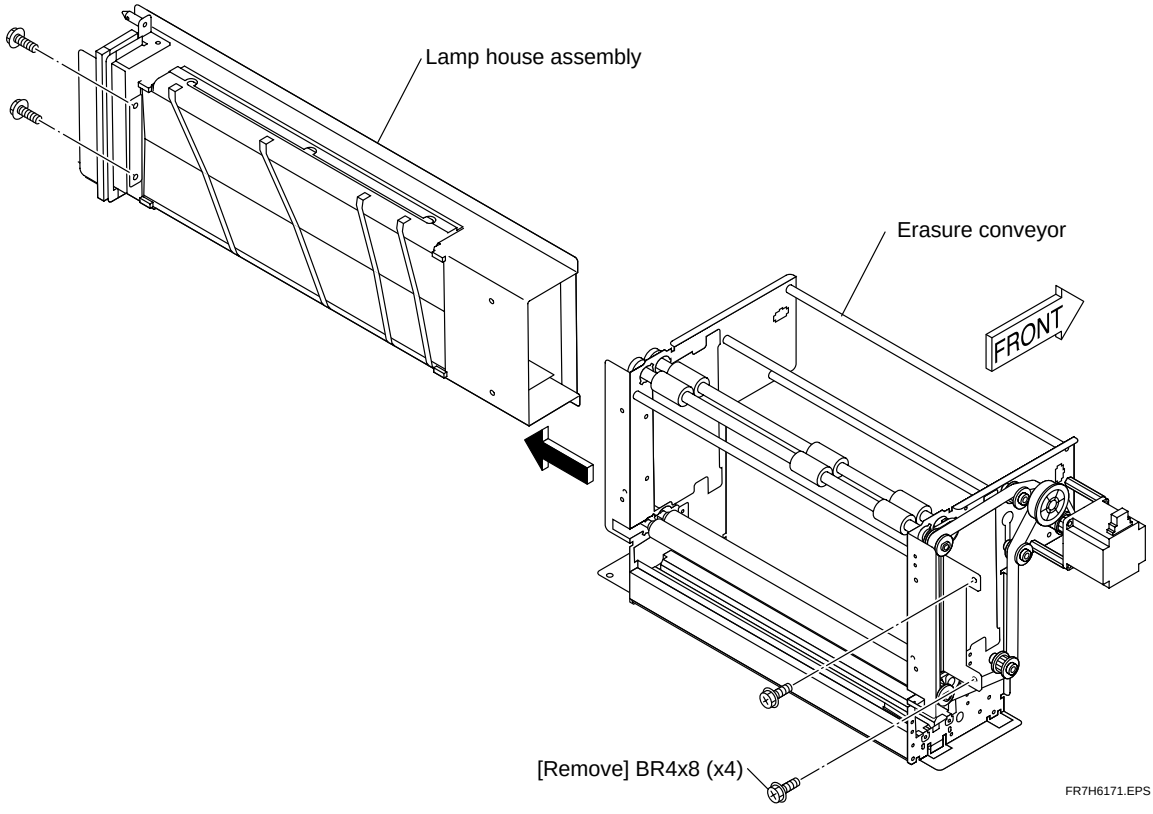
3Y — At intervals of three years, or when 180,000 IPs have been processed → Replace

◆ *NOTE* ◆

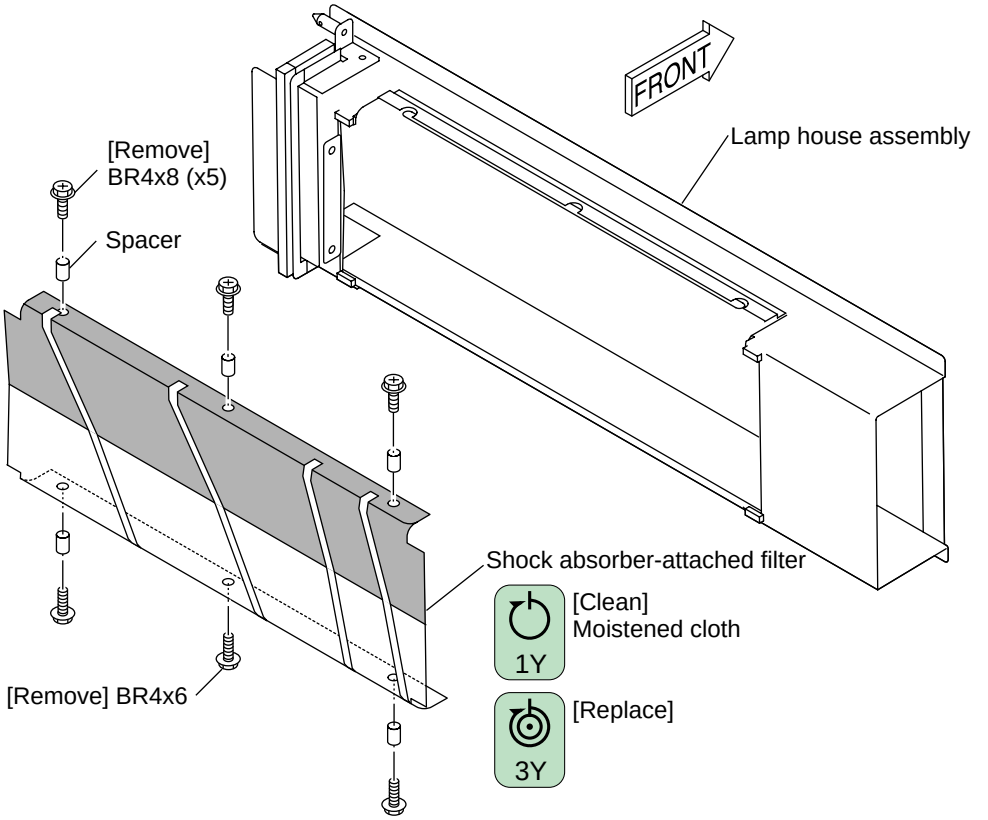
When cleaning the shock absorber-attached filter with a moistened cloth, use care not to touch the shock absorber.



(1) Remove the lamp house assembly.



(2) Clean or replace the shock absorber-attached filter.

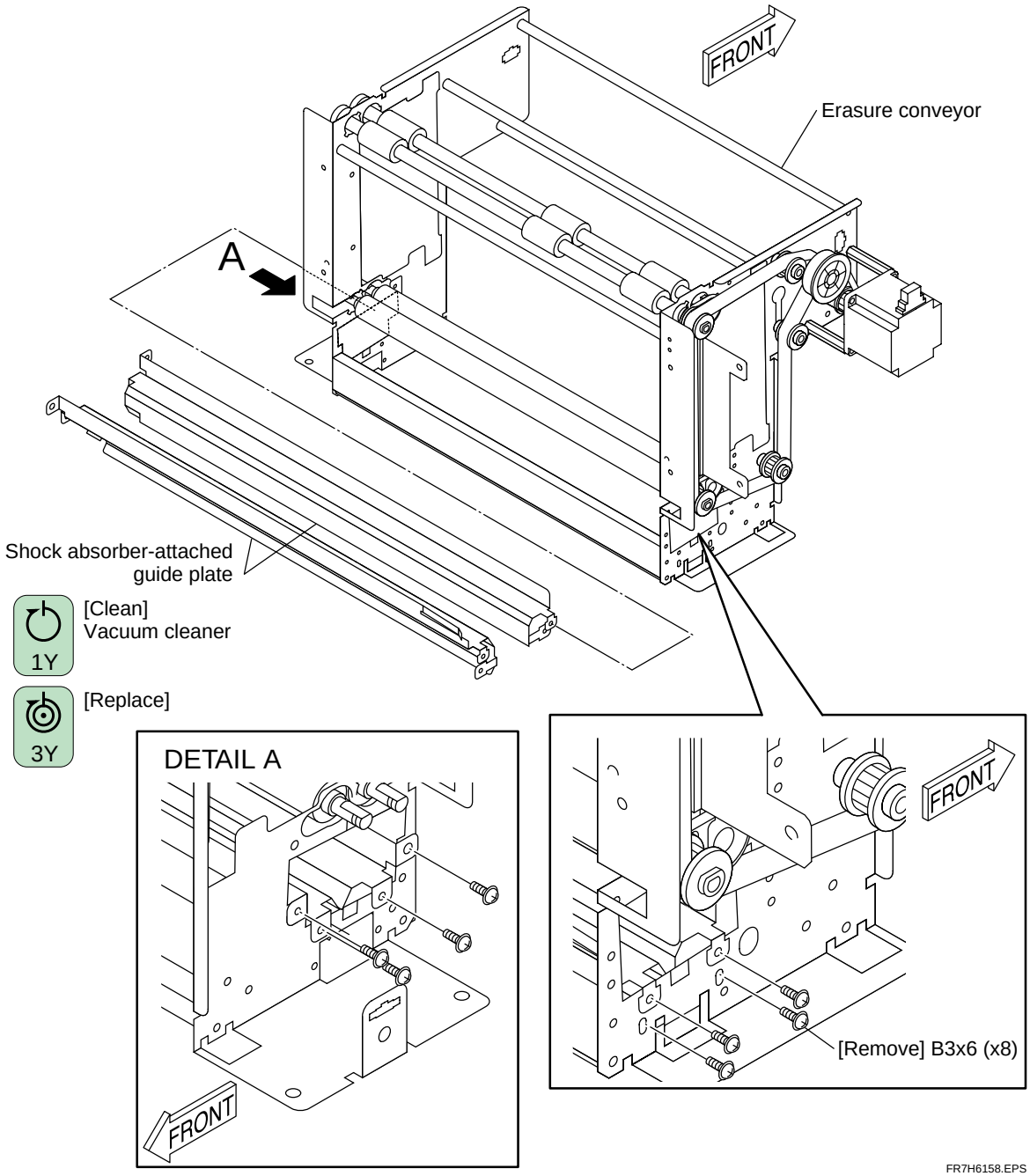


8.6 Erasure Conveyor (Cleaning/Replacing the Shock Absorber-Attached Guide Plates)

1Y — At intervals of one year, or when 60,000 IPs have been processed → Clean

3Y — At intervals of three years, or when 180,000 IPs have been processed → Replace

(1) Remove the shock absorber-attached guide plates.

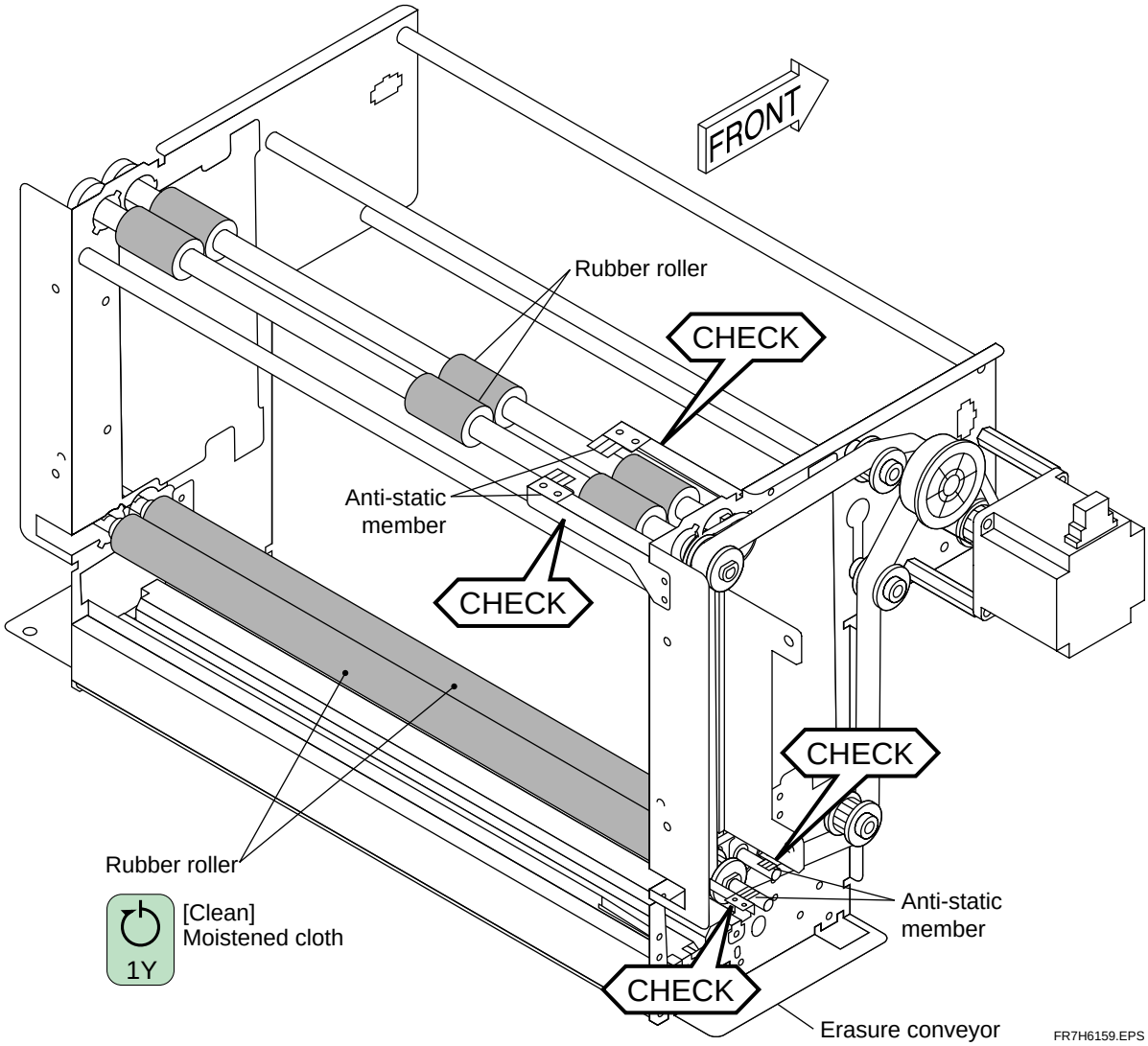


(2) By reversing the procedures of step (1), reinstall the shock absorber-attached guide plates.

8.7 Erasure Conveyor (Cleaning the Rubber Rollers)

1Y

At intervals of one year, or when 60,000 IPs have been processed → Clean.



◆ *CHECK* ◆

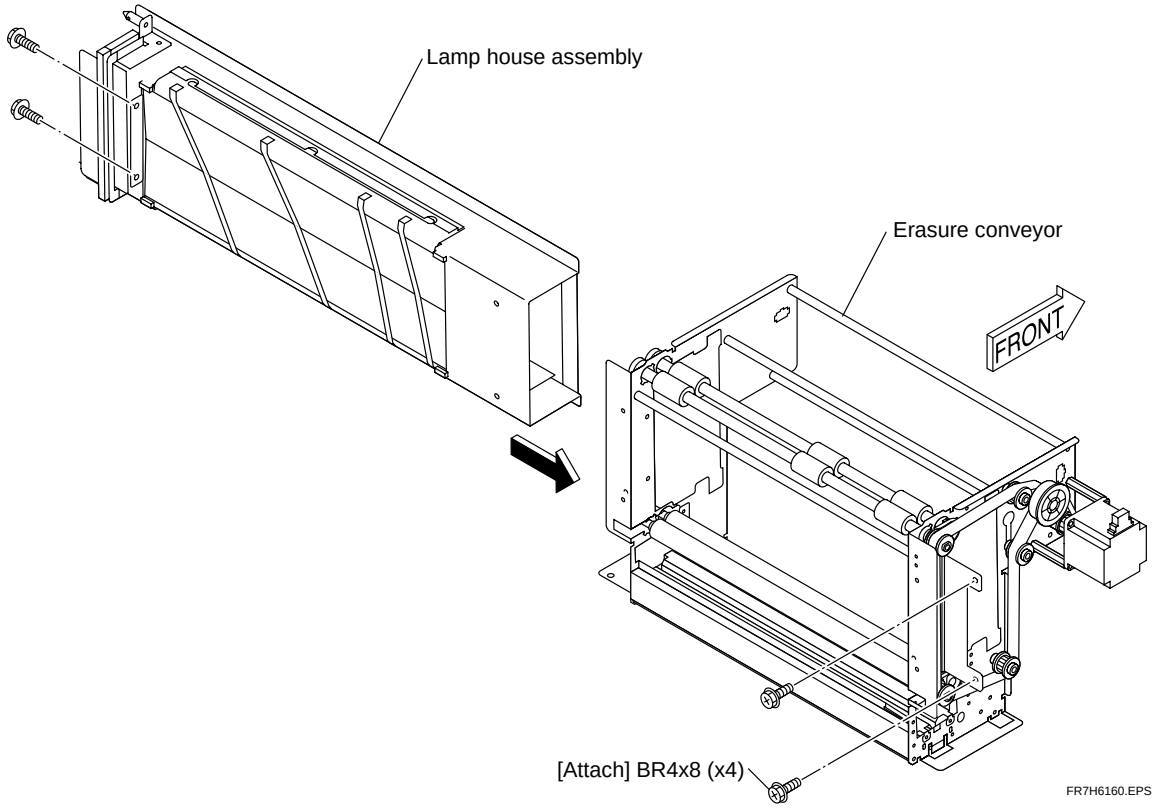
Make sure that the anti-static members are brought into contact with the rollers.

8.8 Erasure Conveyor (Installing the Lamp House Assembly/ Shock Absorber-Attached Reflection Plate)

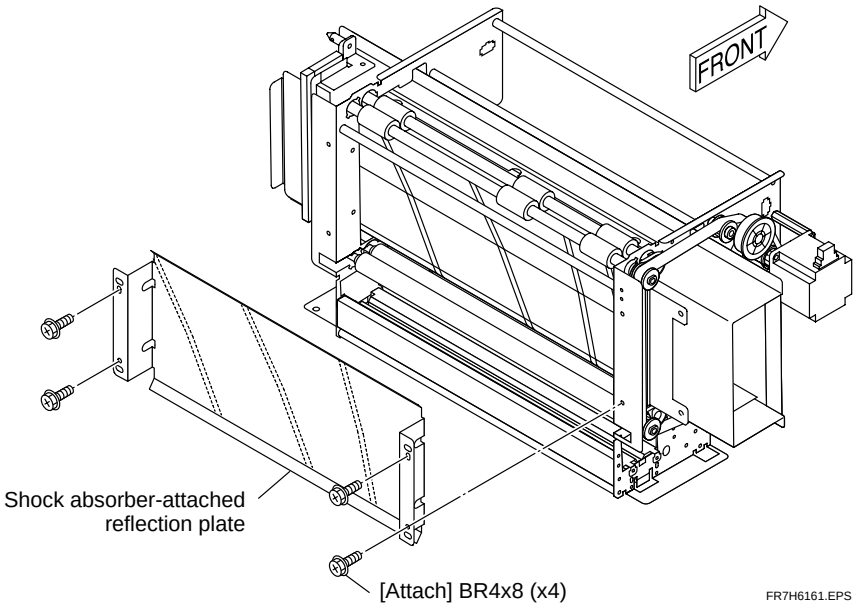
1Y

At intervals of one year, or when 60,000 IPs have been processed → Install.

(1) Install the lamp house assembly.



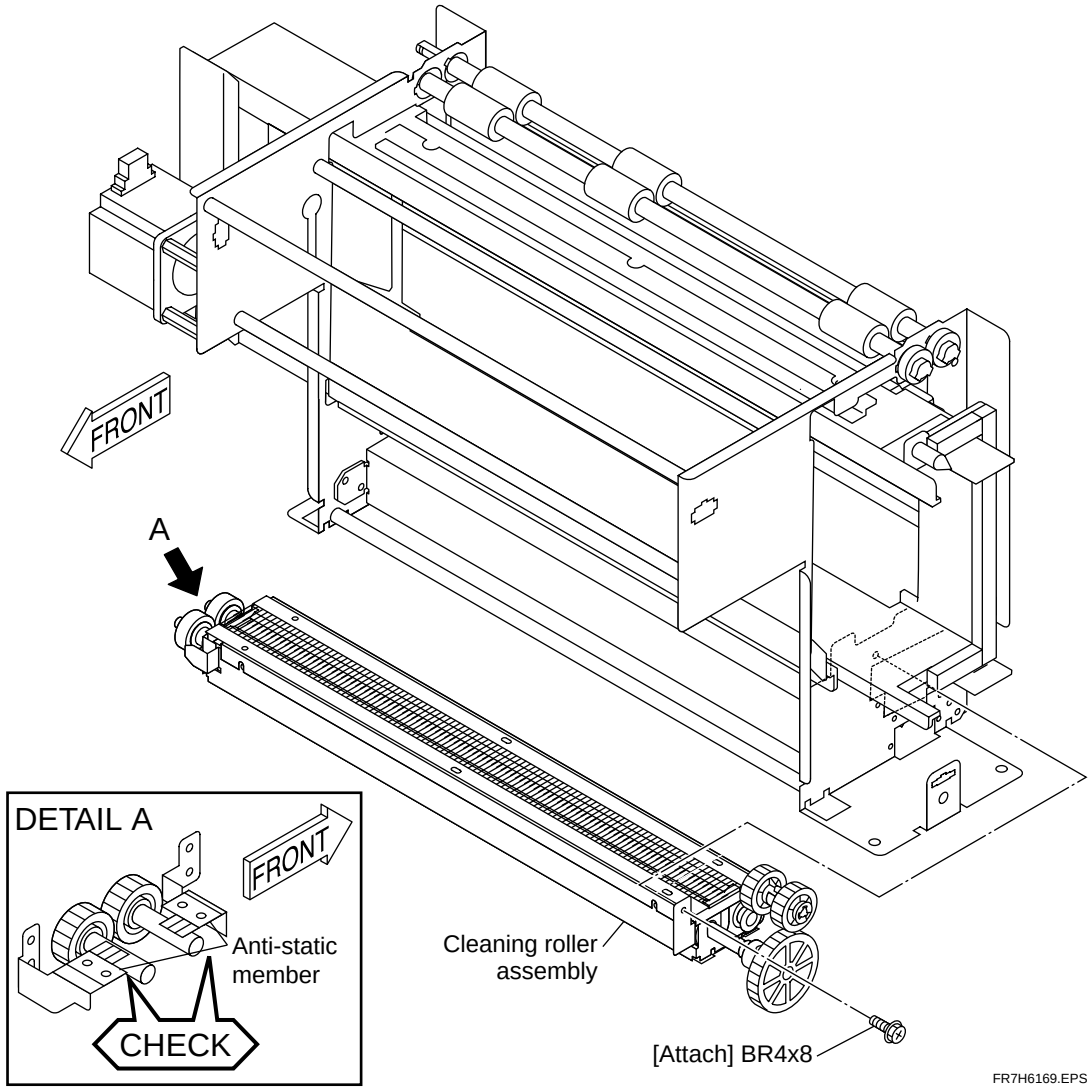
(2) Install the shock absorber-attached reflection plate.



8.9 Erasure Conveyor (Installing the Cleaning Rollers)

1Y

At intervals of one year, or when 60,000 IPs have been processed → Install.



◆ ***CHECK*** ◆

Make sure that the anti-static members are brought into contact with the rollers.

8.10 Installing the Erasure Conveyor

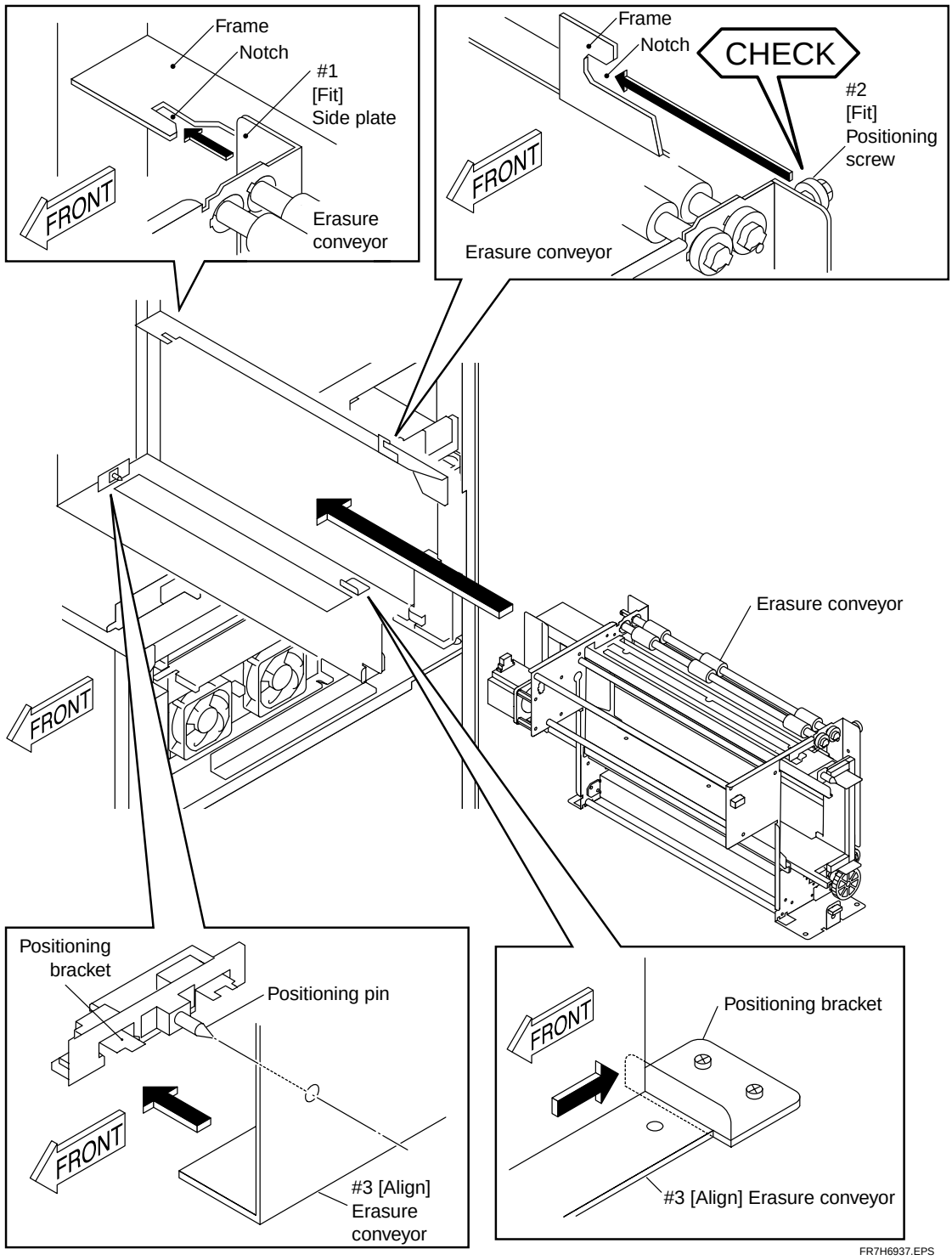
1Y

At intervals of one year, or when 60,000 IPs have been processed → Install.

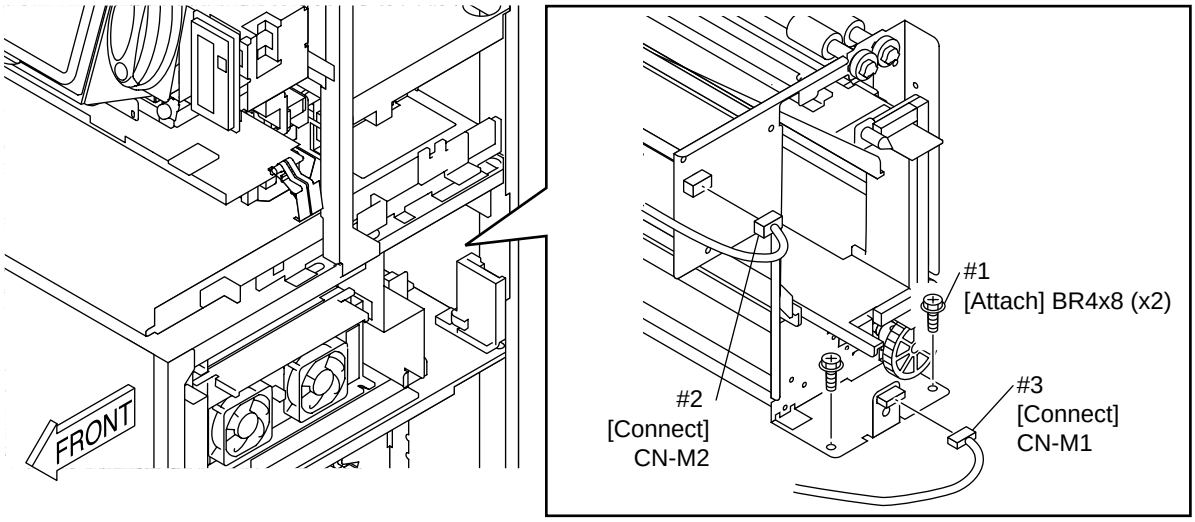
CAUTION

The erasure lamp should be handled carefully. If it is hit, the erasure lamp may be broken, so you may get injured.

(1) Insert the erasure conveyor.

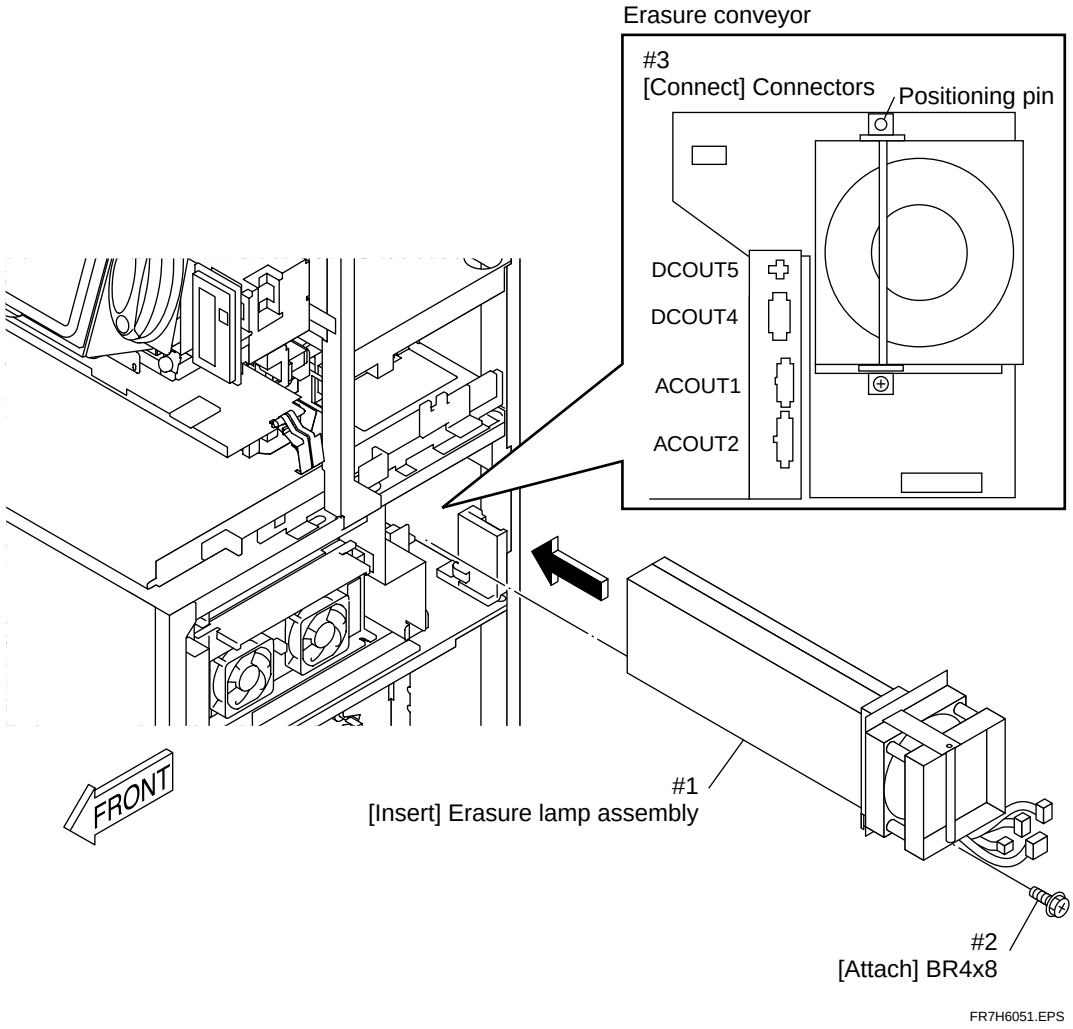


(2) Install the erasure conveyor.



FR7H6938.EPS

(3) Insert the erasure lamp assembly into the erasure conveyor.



FR7H6051.EPS

9. Subscanning Unit and Side-Positioning Conveyor

9.1 Subscanning Unit (Cleaning the SUS Belt/Rubber Belt/ Kapton® Belt)

2Y

At intervals of two years, or when 120,000 IPs have been processed → Clean.

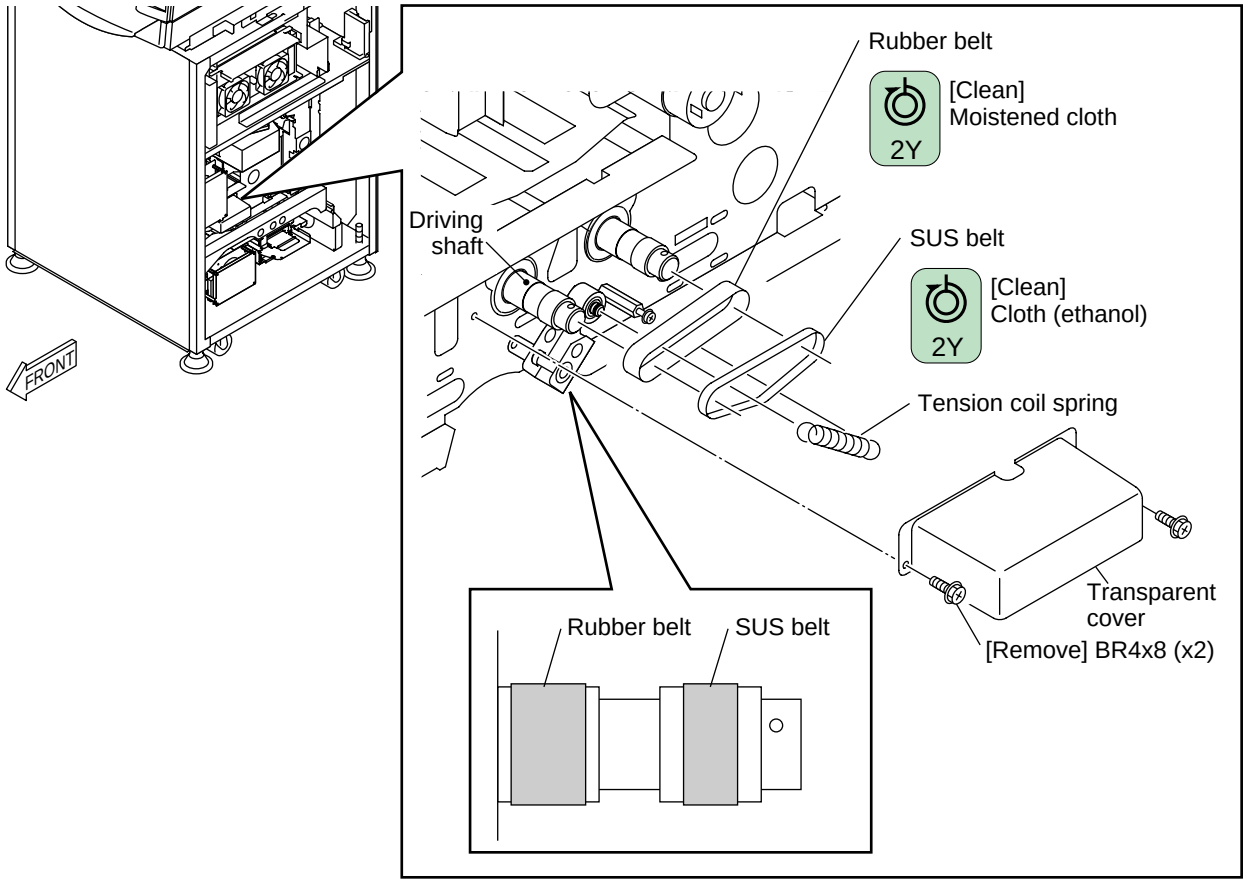
CAUTION

Wear gloves when cleaning the belts.

◇ ***REFERENCE*** ◇

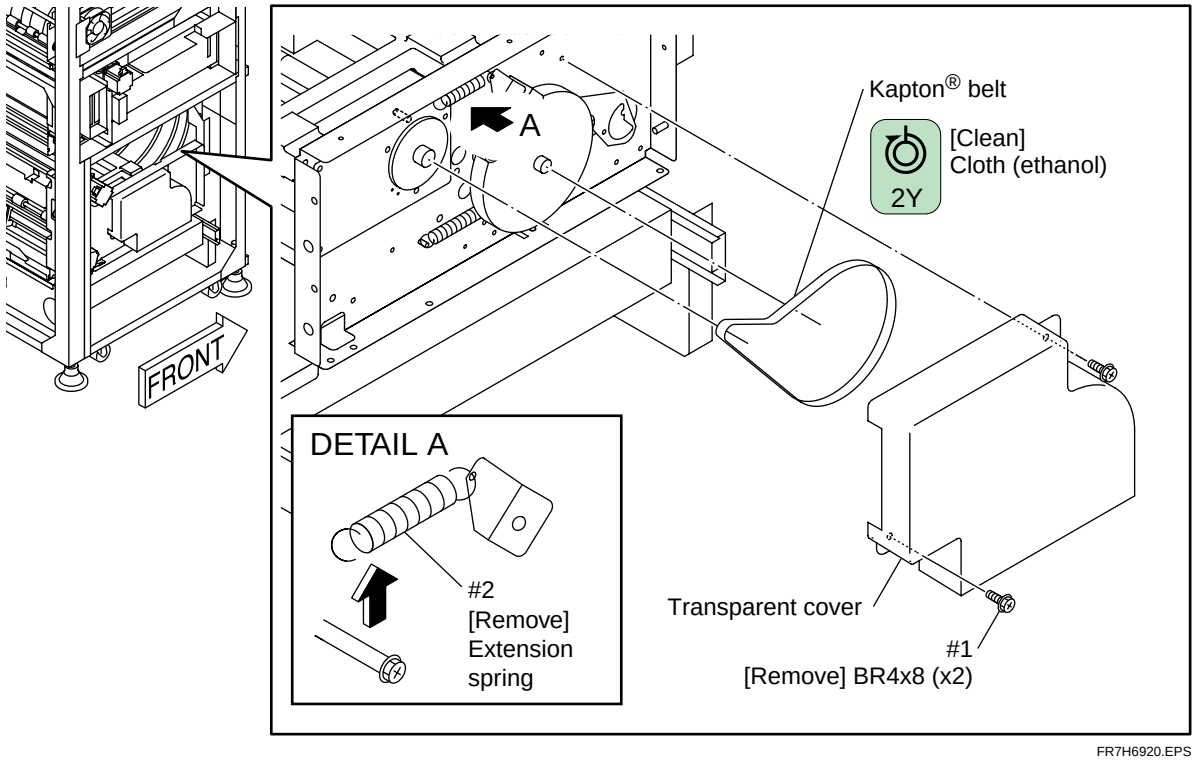
Remove/install the rubber belt while rotating the driving shaft.

■ SUS and Rubber Belts



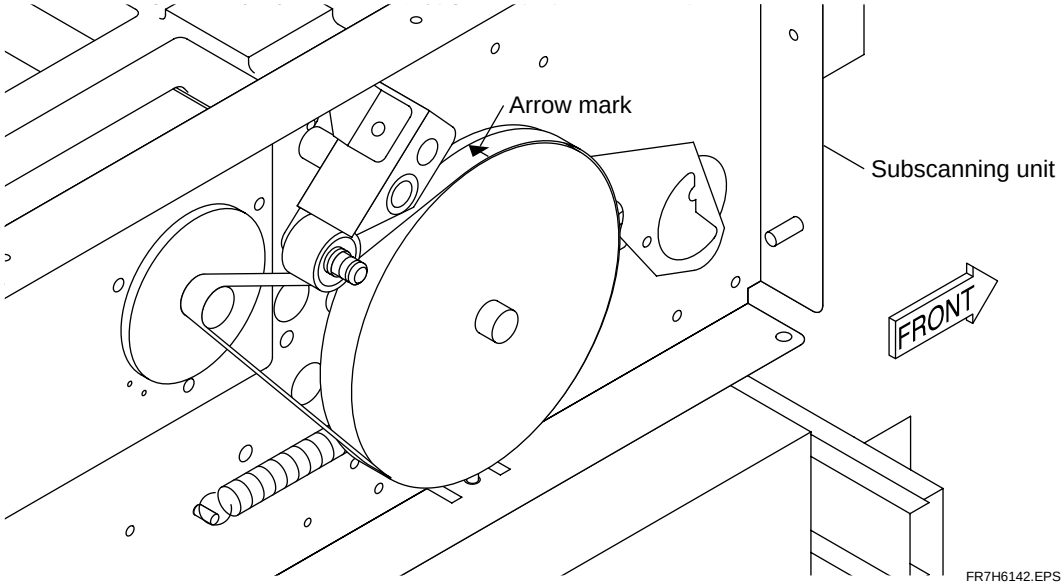
FR7H6140.EPS

■ Kapton® Belt



◆ *INSTRUCTIONS* ◆

- *When installing the Kapton® belt, ensure that the arrow mark printed on it faces toward the subscanning unit.*
- *After the Kapton® belt is installed, manually rotate the flywheel to check that the belt does not disengage.*



9.2 Pulling Out the Scanner Unit

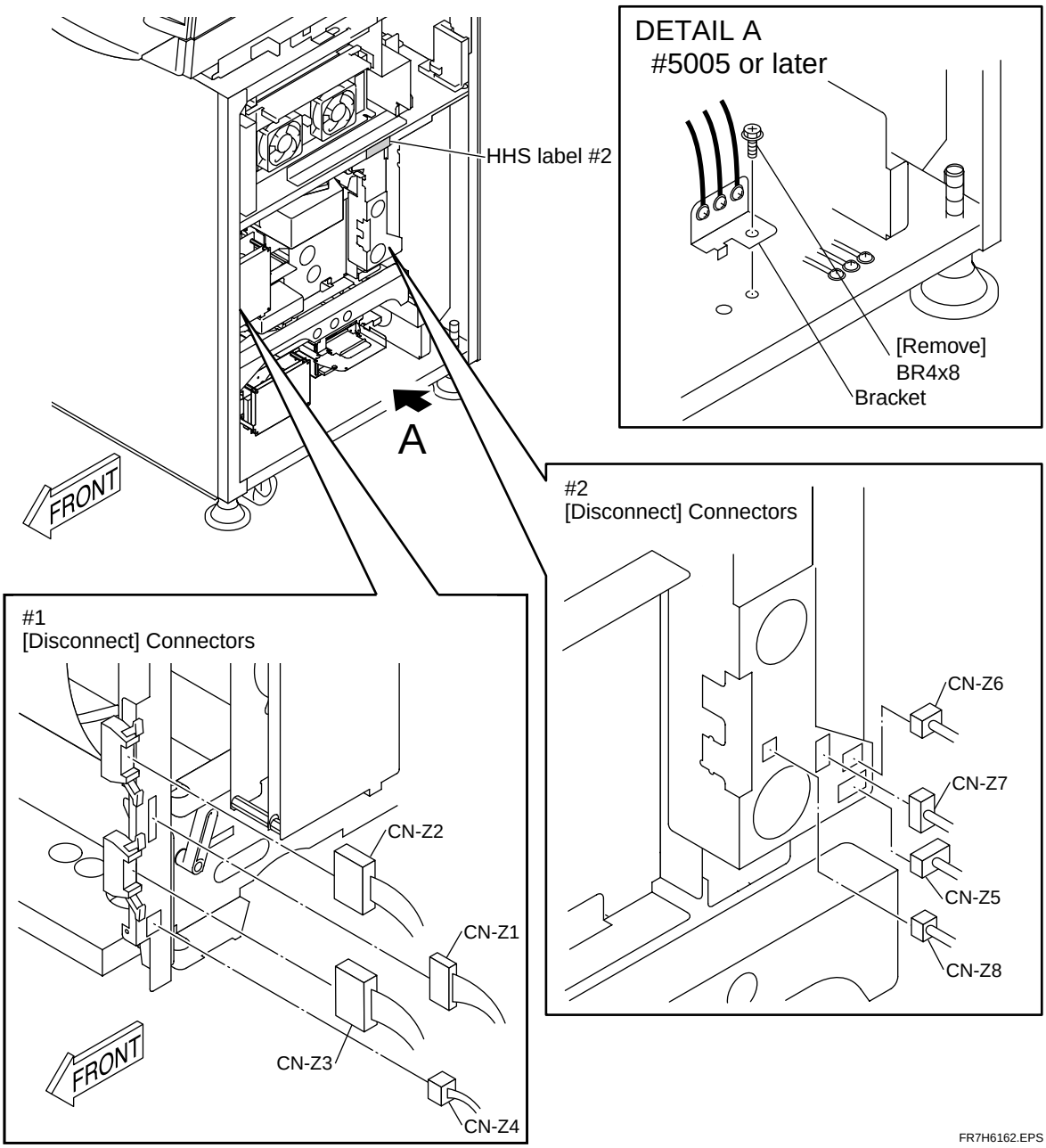
1Y

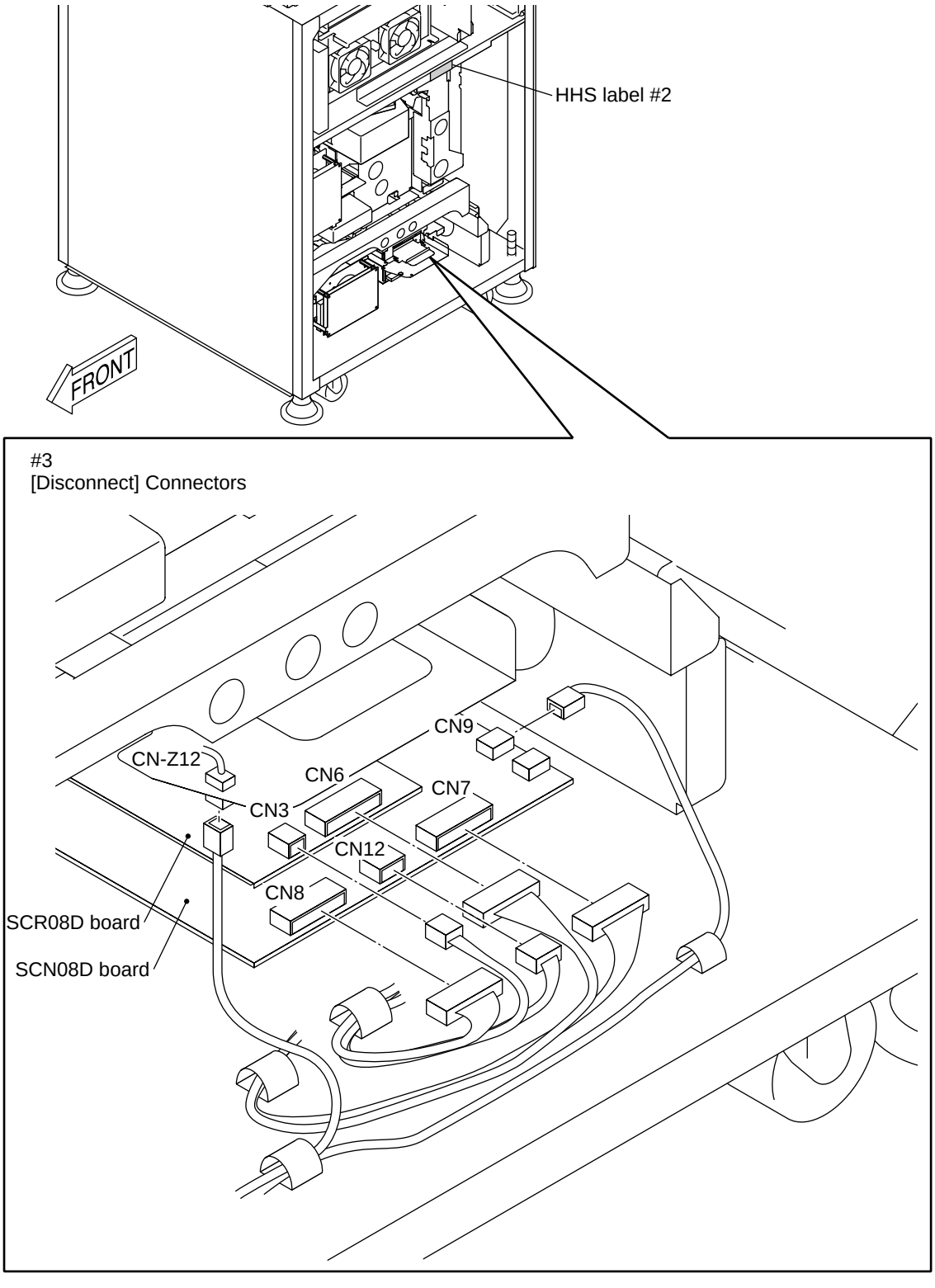
At intervals of one year, or when 60,000 IPs have been processed → Pull out.

CAUTION

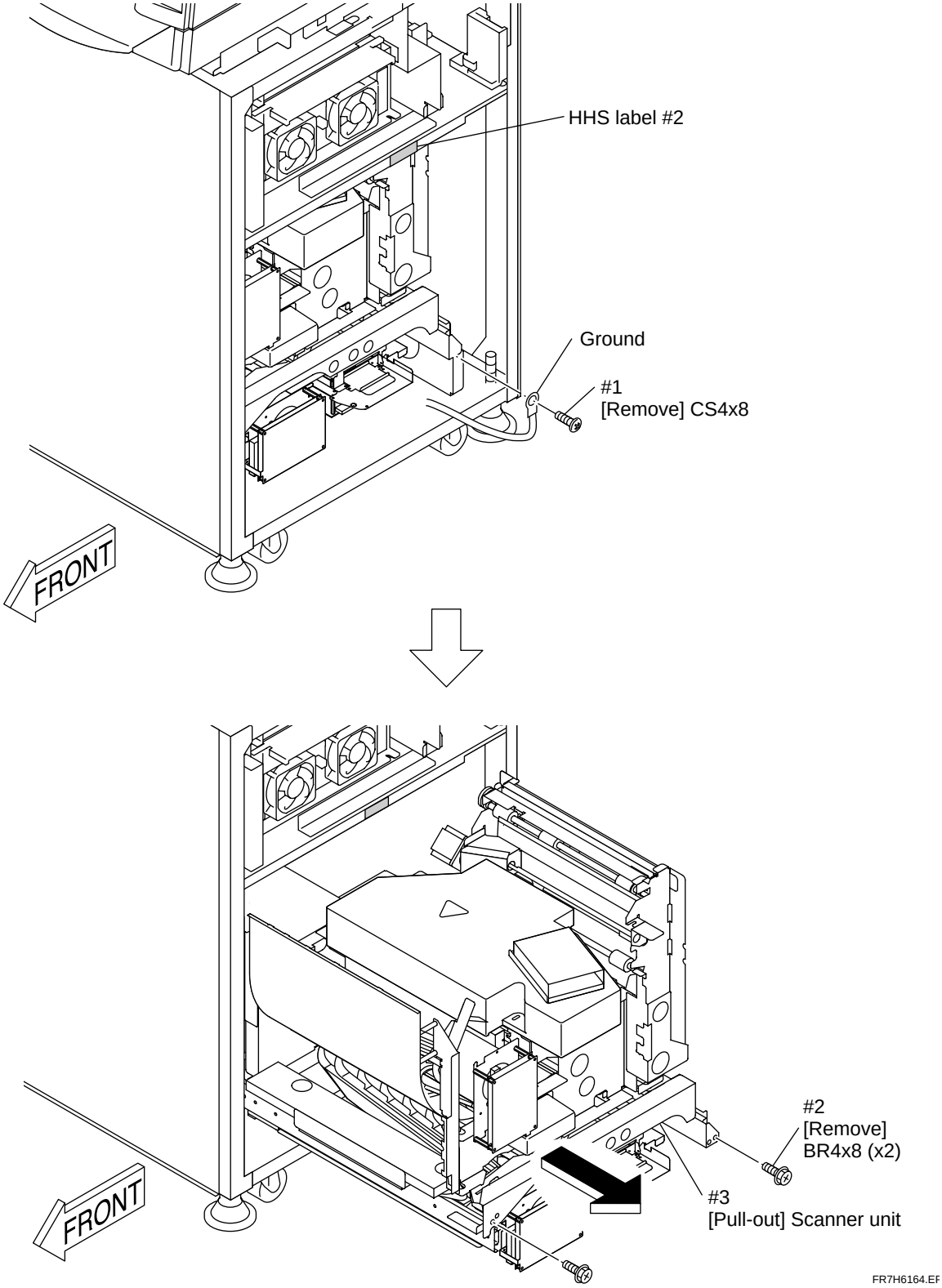
When servicing any printed circuit board, be sure to wear an anti-static wristband to ground your body. If your body is not grounded, static electricity built on your body may cause damage to electric parts on the board.

(1) Disconnect the connectors.




HHS label #2
FRONT
#3
[Disconnect] Connectors
CN9
CN-Z12
CN6
CN7
CN3
CN12
CN8
SCR08D board
SCN08D board
FR7H6163.EPS

(2) Pull out the scanner unit.



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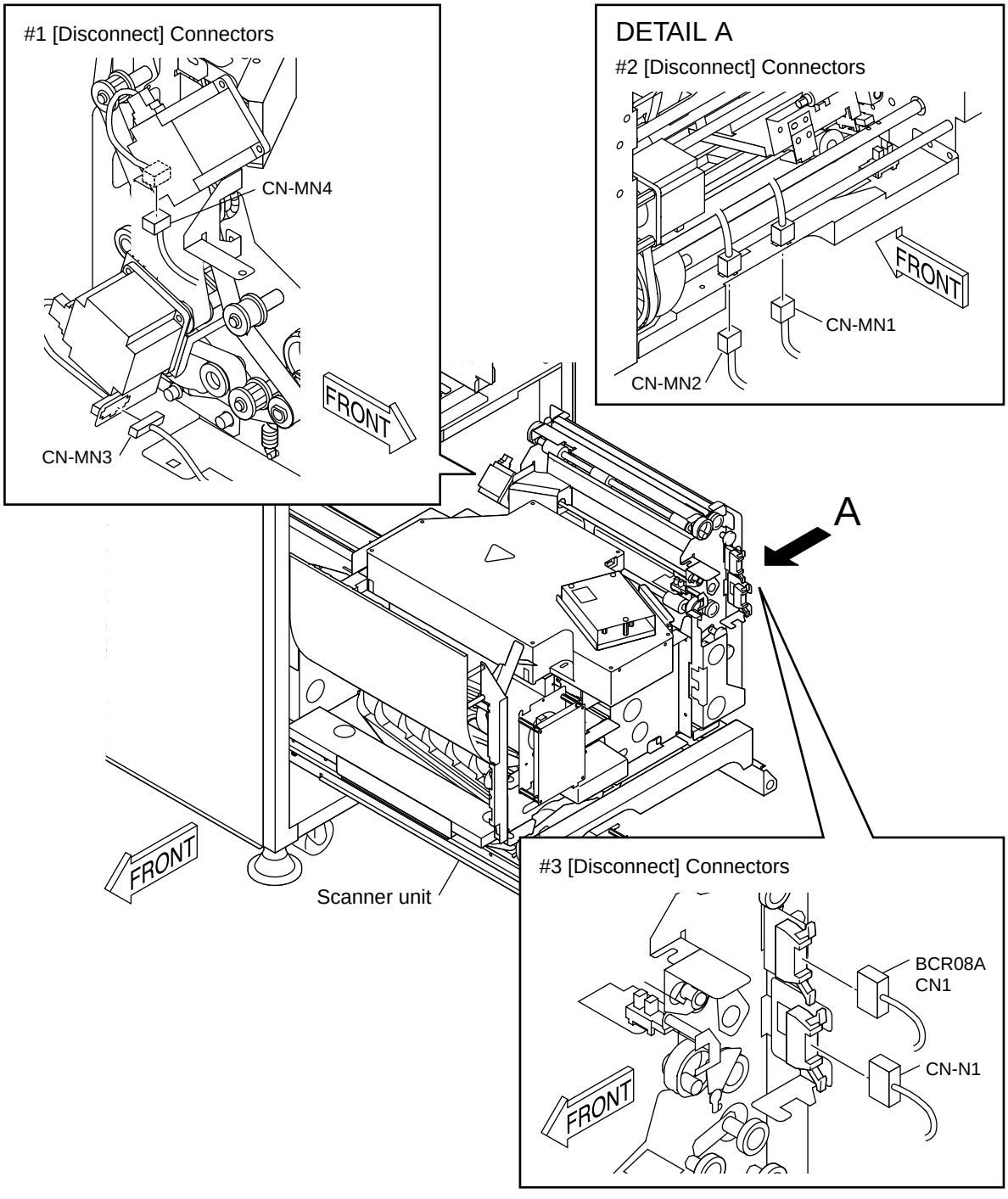
9.3 Removing the Side-Positioning Conveyor

1Y

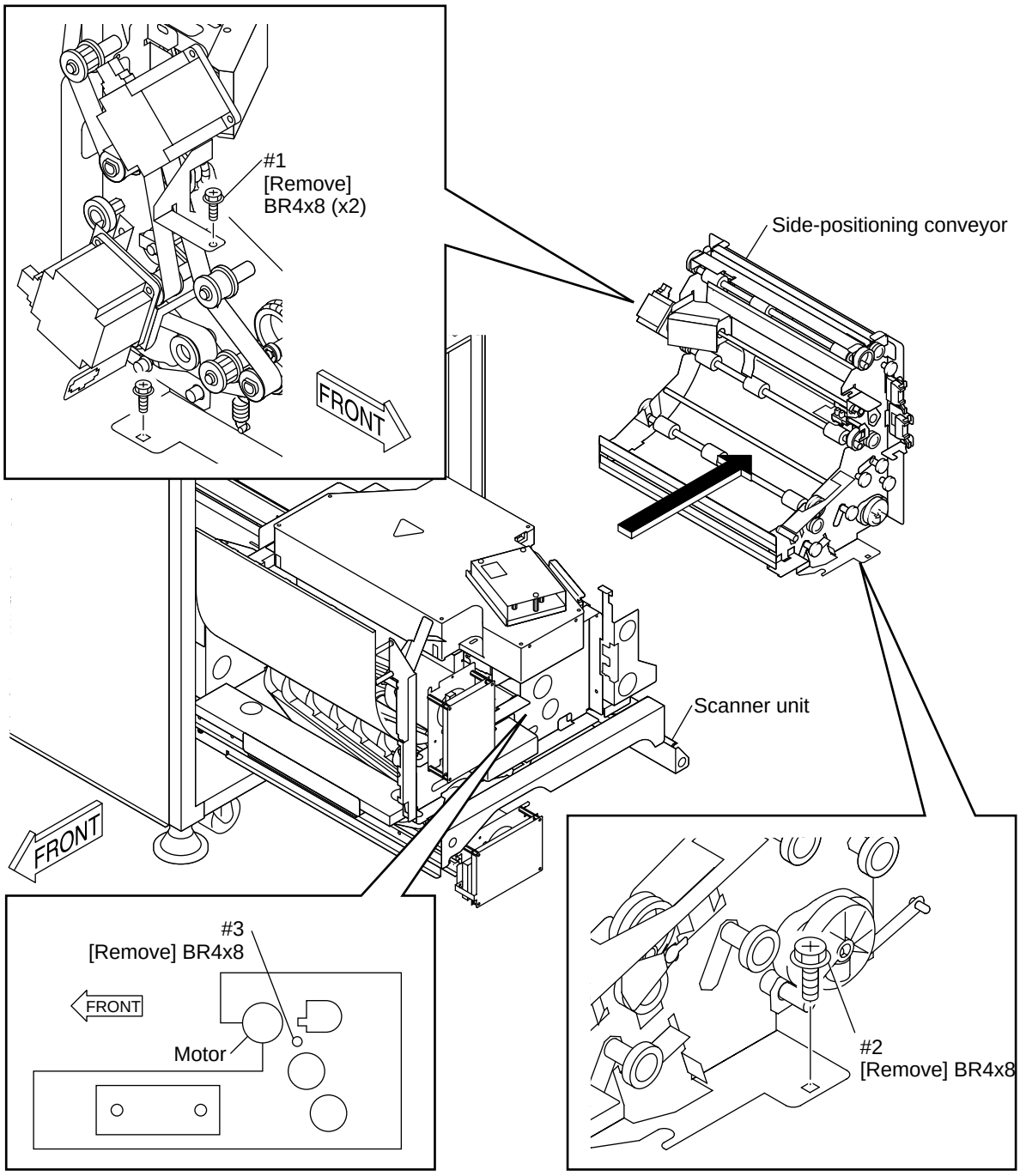
At intervals of one year, or when 60,000 IPs have been processed → Remove.

(1) Disconnect the connectors.



FR7H6165.EPS

(2) Remove the side-positioning conveyor.



FR7H6166.EPS

9.4 Side-Positioning Conveyor (Cleaning/Replacing the Shock Absorber-Attached Guide Plates)

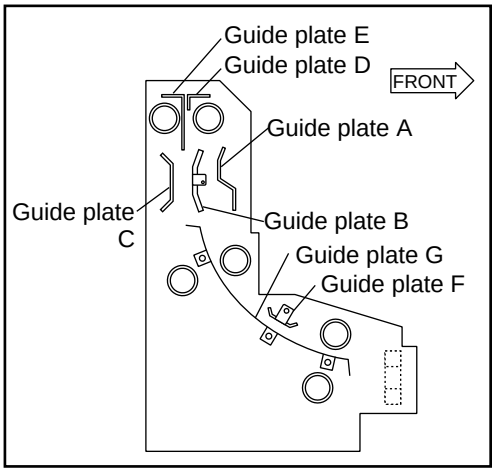
1Y

At intervals of one year, or when 60,000 IPs have been processed → Clean.

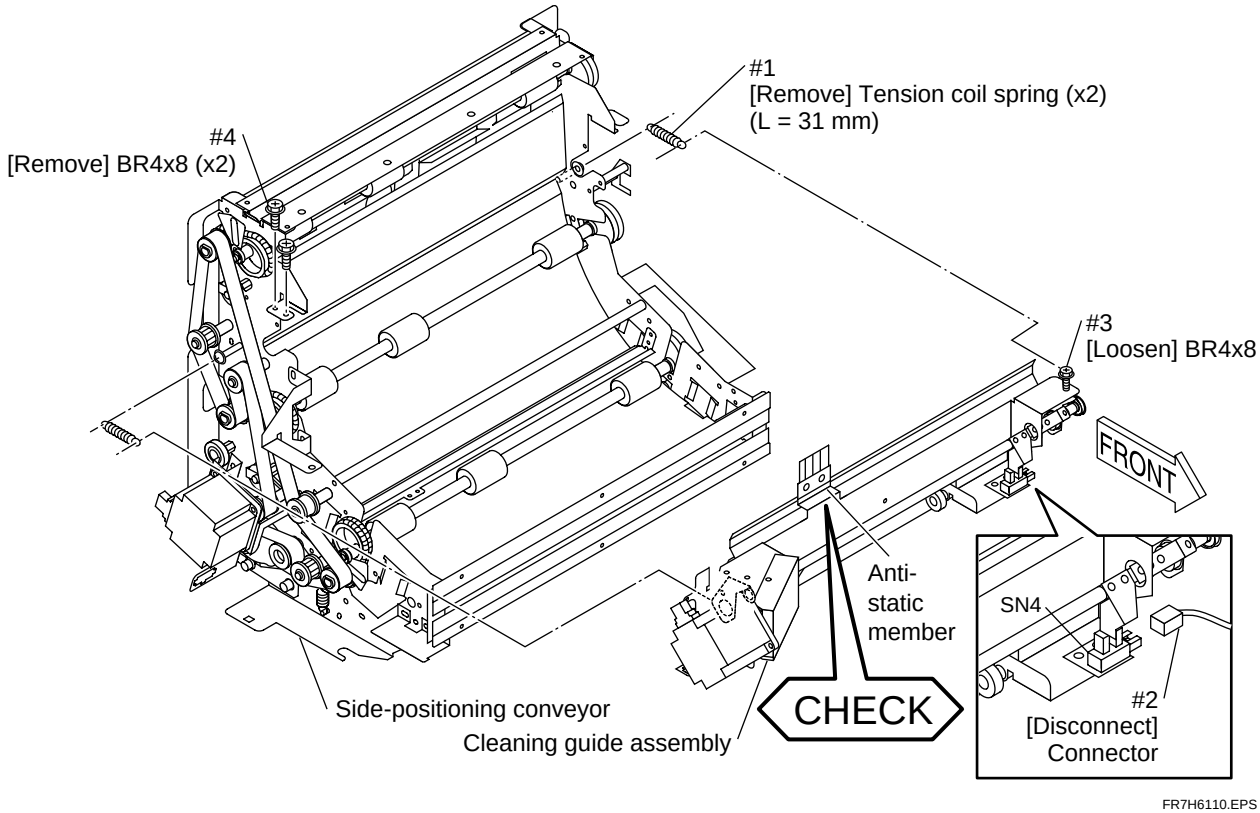
3Y

At intervals of three years, or when 180,000 IPs have been processed → Replace.

(1) Remove the cleaning guide assembly.



FR7H6119.EPS

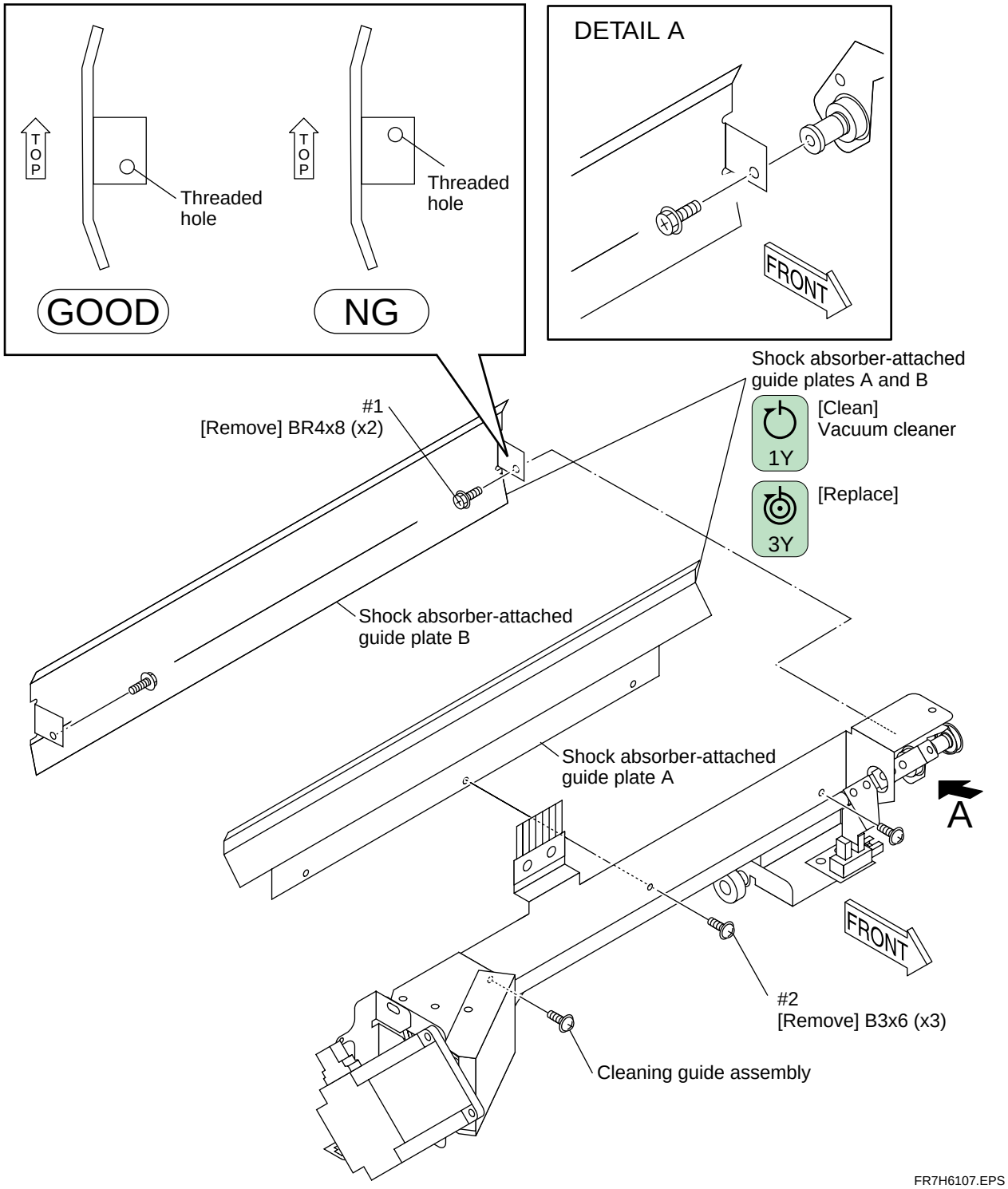


FR7H6110.EPS

(2) Clean or replace the shock absorber-attached guide plates A and B.

◆ ***NOTE*** ◆

The cleaning guide assembly should not be installed on the side-positioning conveyor.

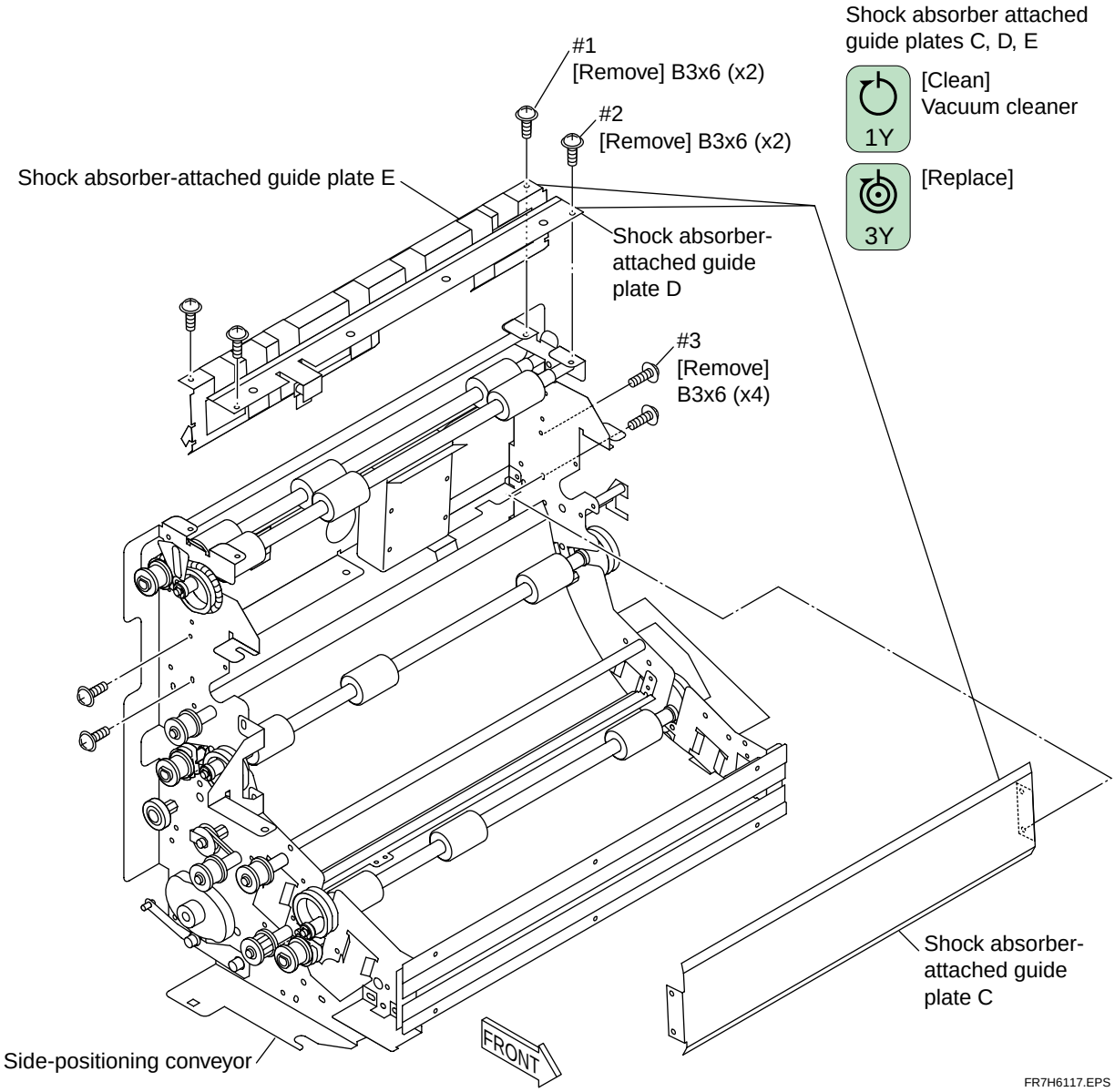


FR7H6107.EPS

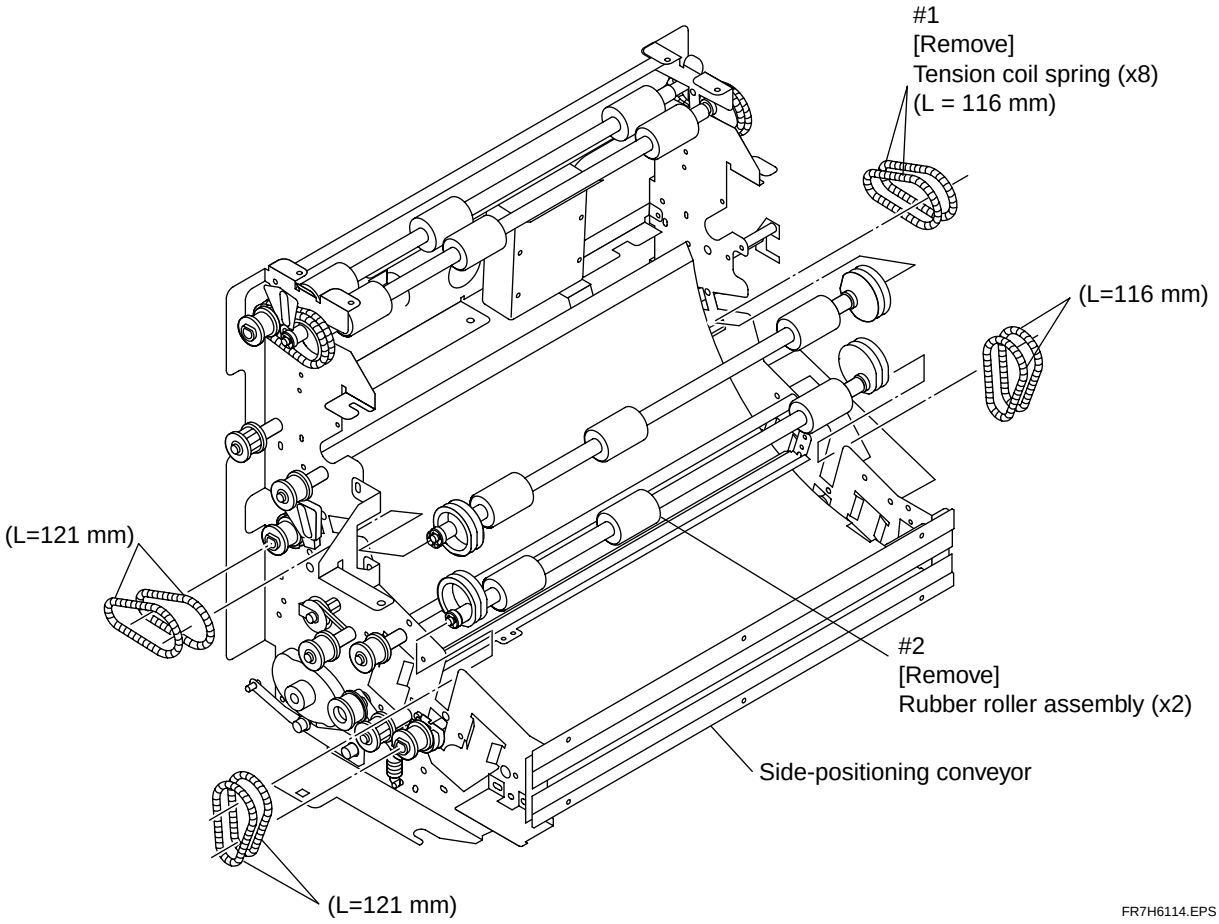
(3) Clean or replace the shock absorber-attached guide plates C, D, and E.

◆ ***NOTE*** ◆

The shock absorber-attached guide plates C, D, and E should not be installed on the side-positioning conveyor.



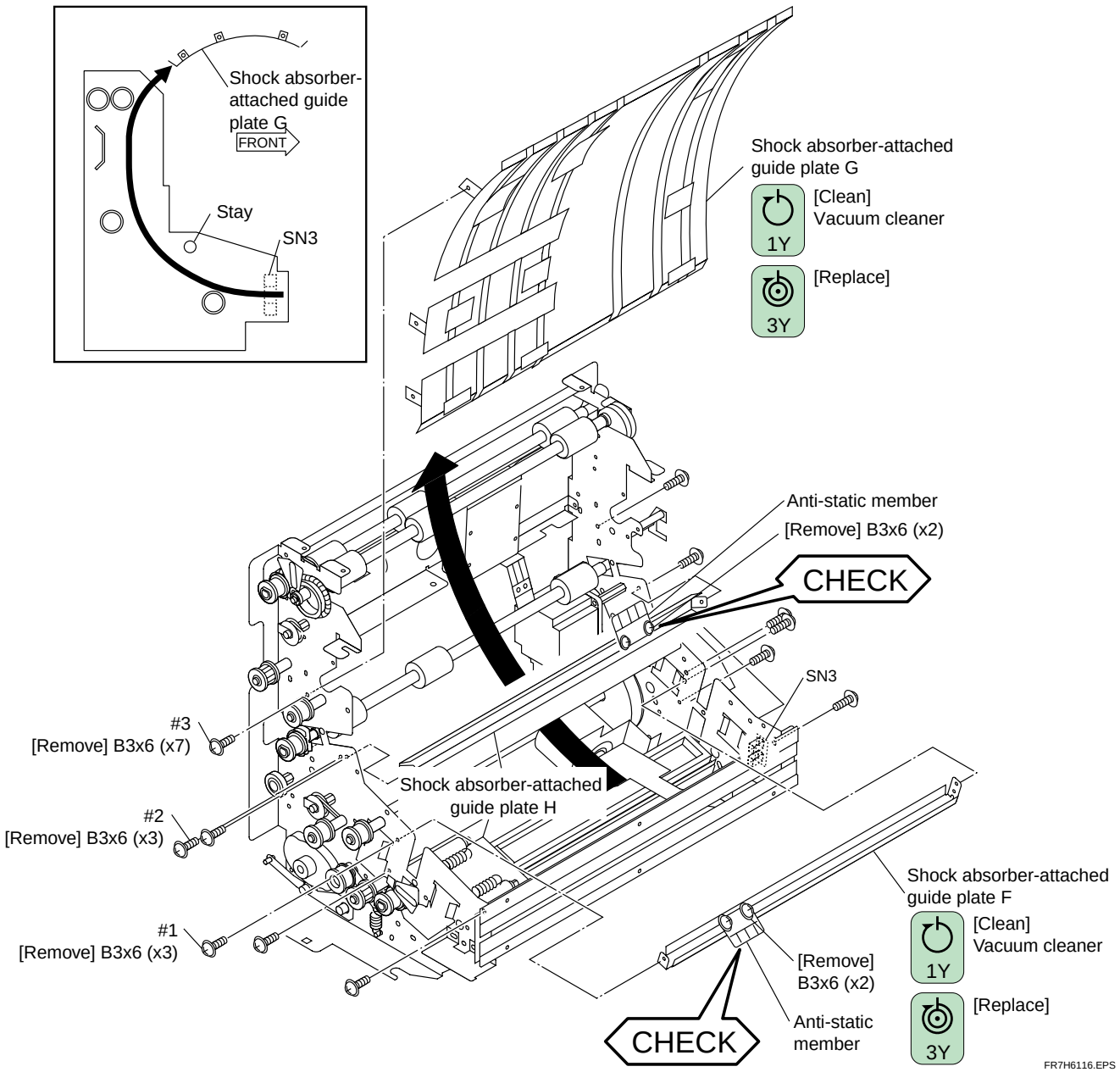
(4) Remove the rubber roller assembly (upper).



(5) Clean the shock absorber-attached guide plates F, G, and H, or replace them.

◆ ***NOTE*** ◆

Do not install the shock absorber-attached guide plates F, G, and H to the side-positioning conveyor.



◆ ***CHECK*** ◆

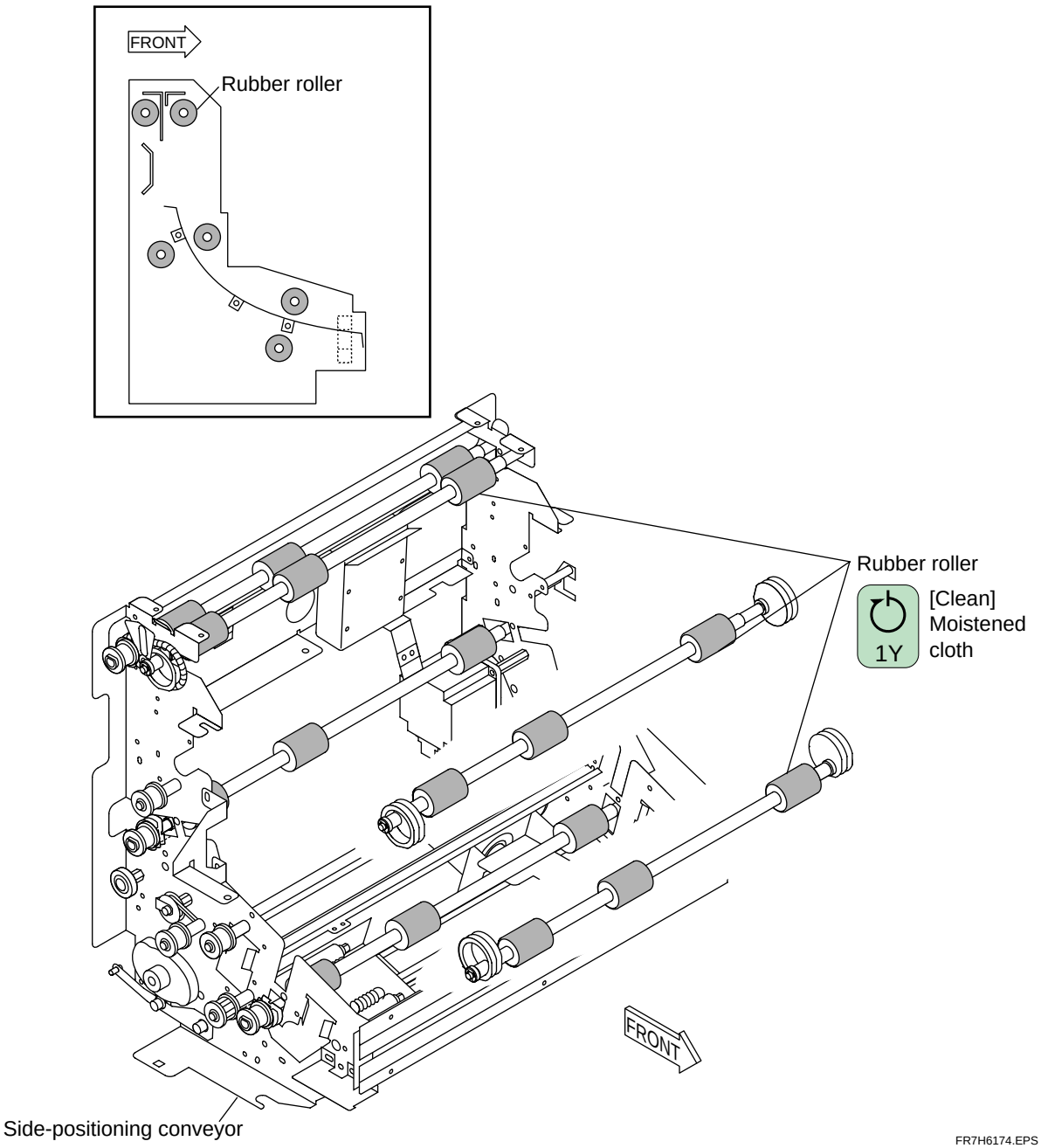
Make sure that the anti-static members are brought into contact with the rollers.

9.5 Side-Positioning Conveyor (Cleaning the Rubber Rollers)

1Y

At intervals of one year, or when 60,000 IPs have been processed → Clean.

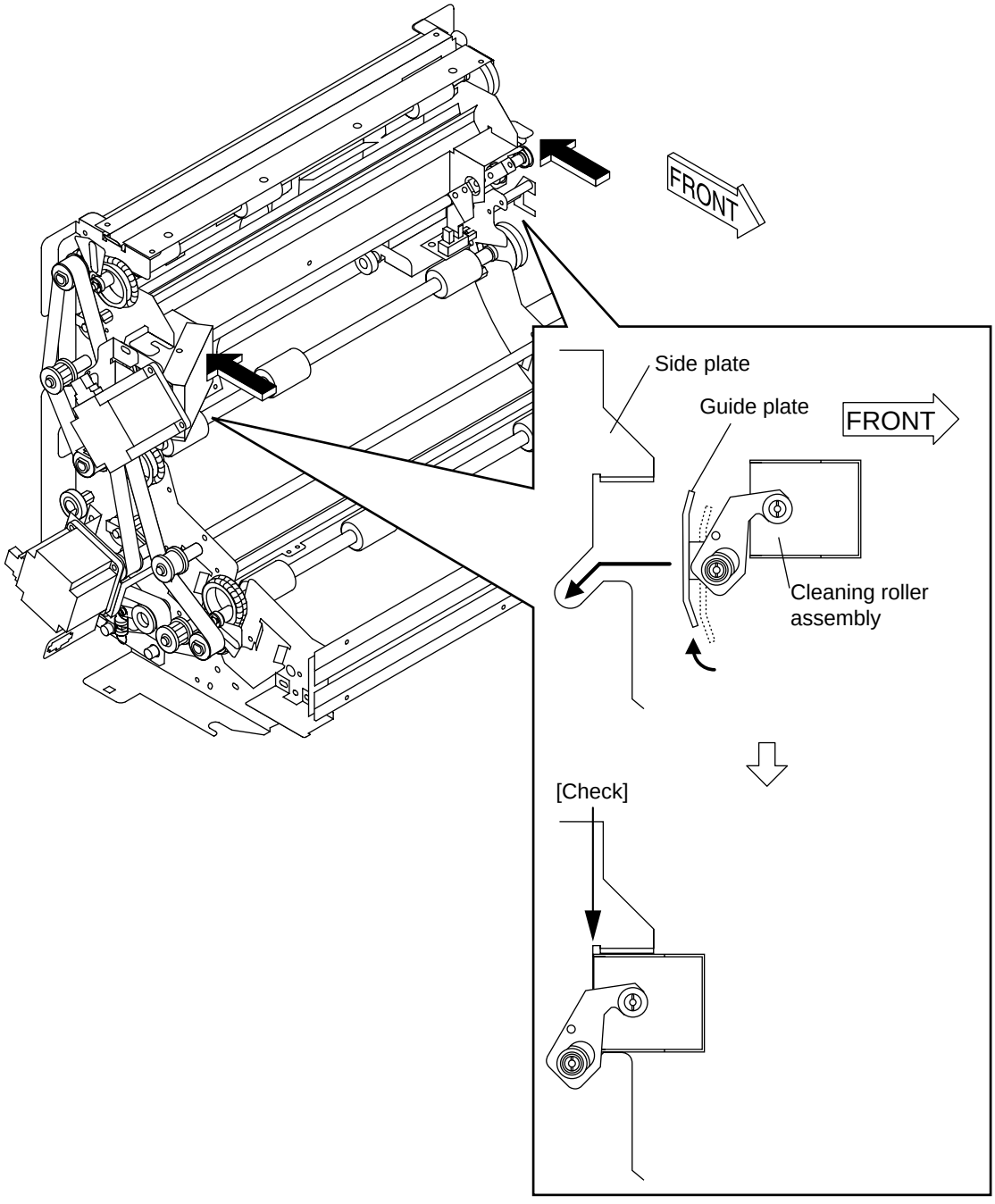
(1) Clean the rubber rollers.



(2) By reversing the procedures described in “9.4 Side-Positioning Conveyor (Cleaning/ Replacing the Shock Absorber-Attached Guide Plates),” reinstall the shock absorber-attached guide plates A through H and the cleaning roller assembly.

◆ *CHECKS* ◆

- *Make sure that the right and left rubber roller assemblies are not installed incorrectly.*
- *Make sure that the anti-static members are brought into contact with the rollers.*
- *Verify that there is no gap between the cleaning roller assembly and the right and left side plates of the side-positioning conveyor.*



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9.6 Subscanning Unit (Removing the Light-Collecting Guide Assemblies)

1Y

At intervals of one year, or when 60,000 IPs have been processed →

Remove.

CAUTIONS

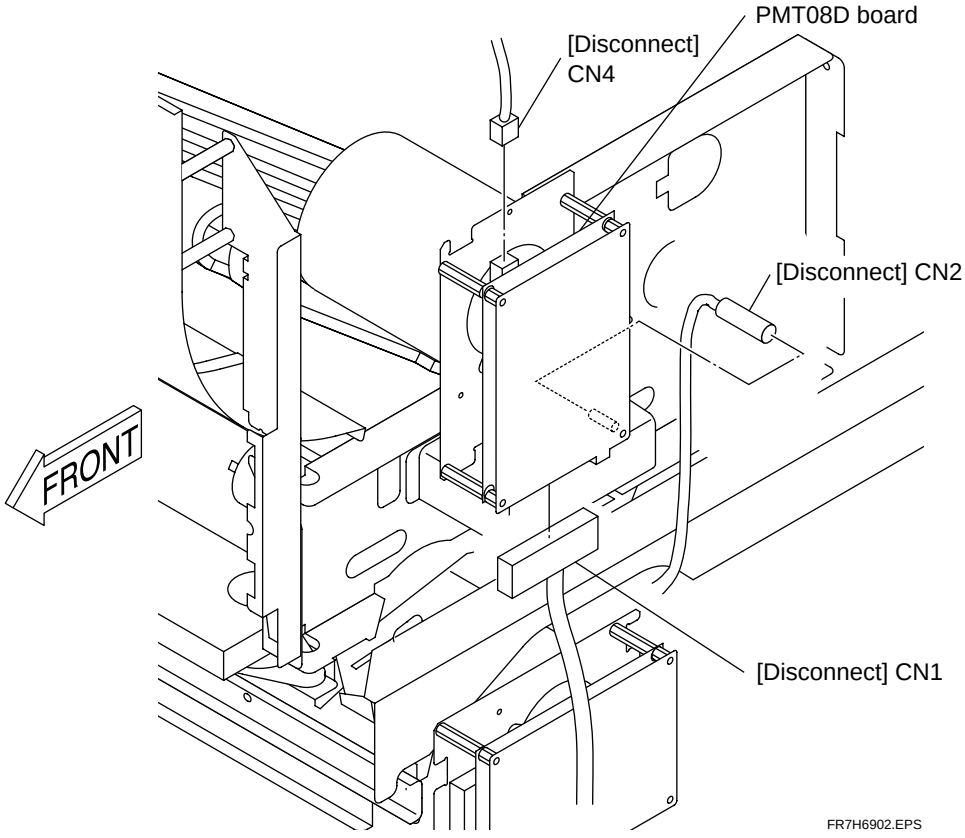
- *Never touch the incidence surface of the light-collecting guide even when you wear gloves.*
- *When servicing a PC board, be sure to wear a wristband to ground your body. If you do not ground your body, the buildup of static electricity on your body may damage electronic components on the PC board.*

◆ *INSTRUCTION* ◆

When handling the light-collecting guide assembly, wear gloves.

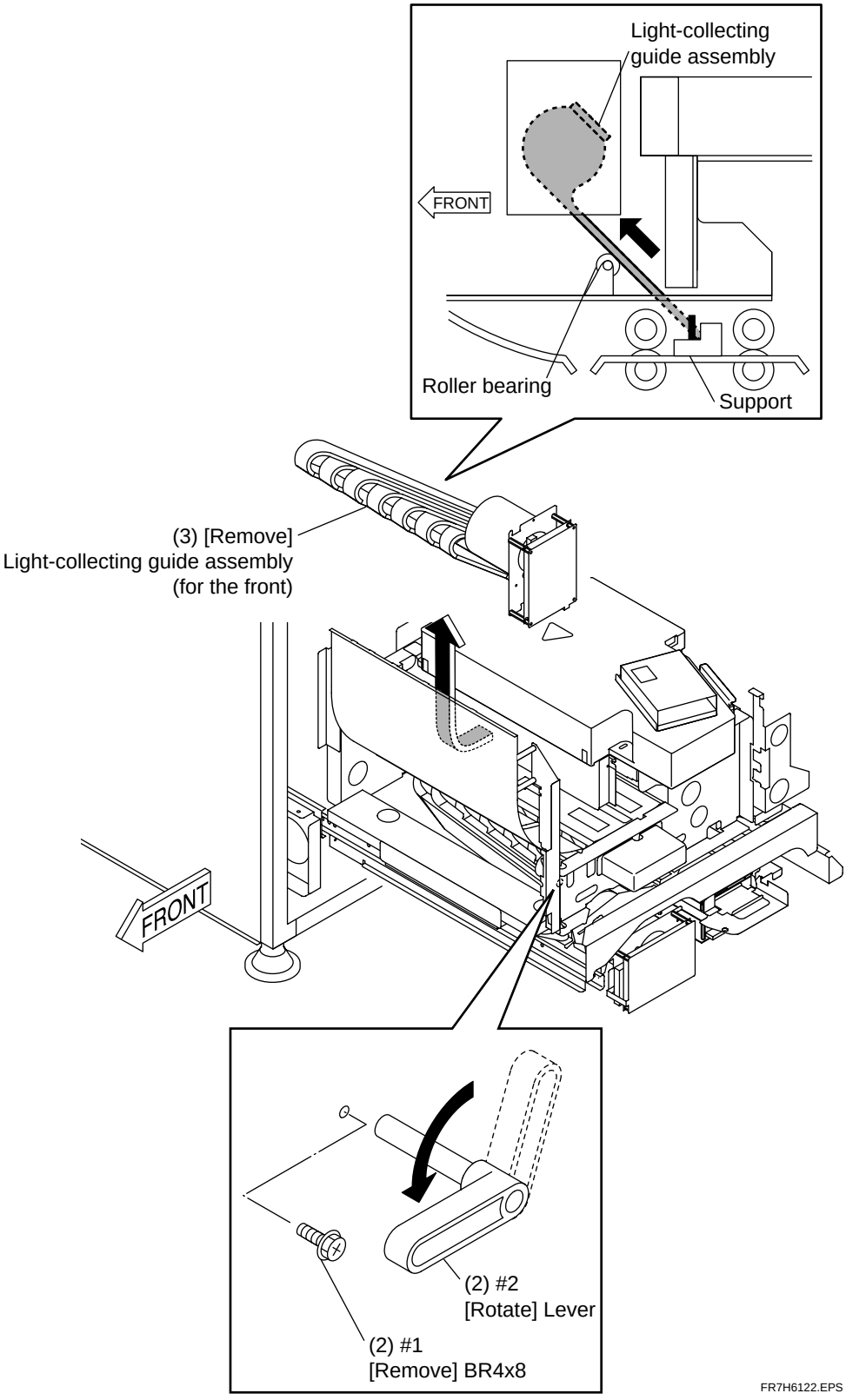
■ Light-Collecting Guide Assembly (for the Front)

(1) Disconnect the PMT08D board connectors.



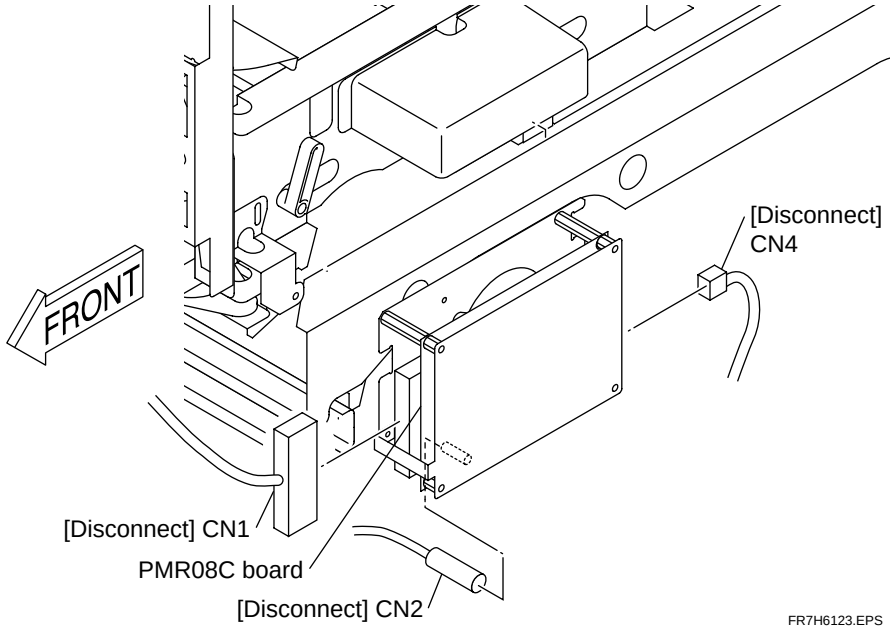
(2) Rotate the lever counterclockwise.

(3) Remove the light-collecting guide assembly (for the front).

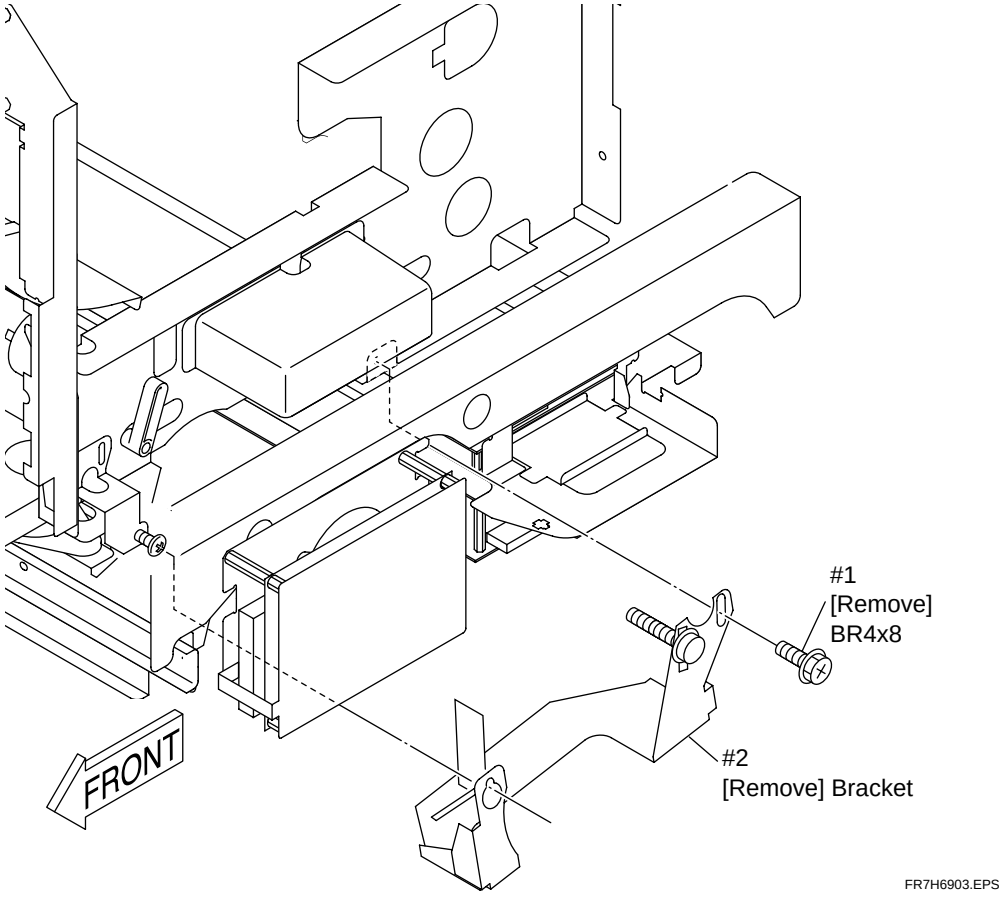


■ Light-Collecting Guide Assembly (for the Back)

(1) Disconnect the PMR08C board connectors.

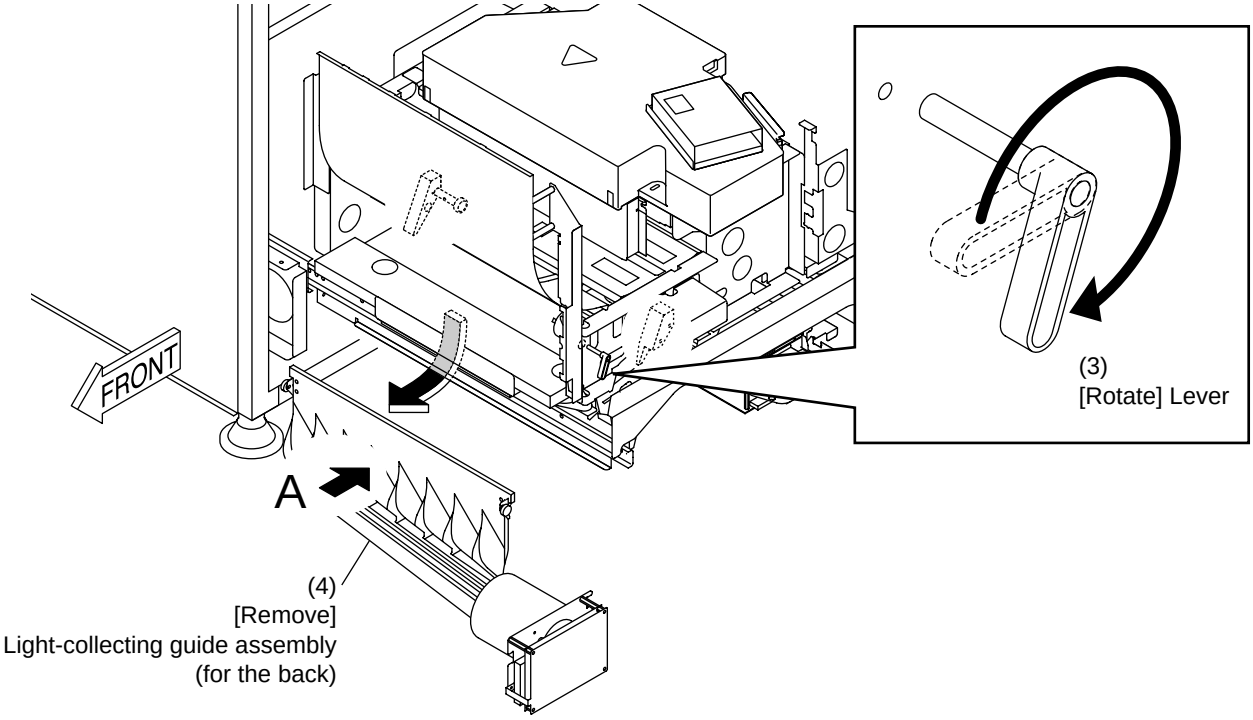


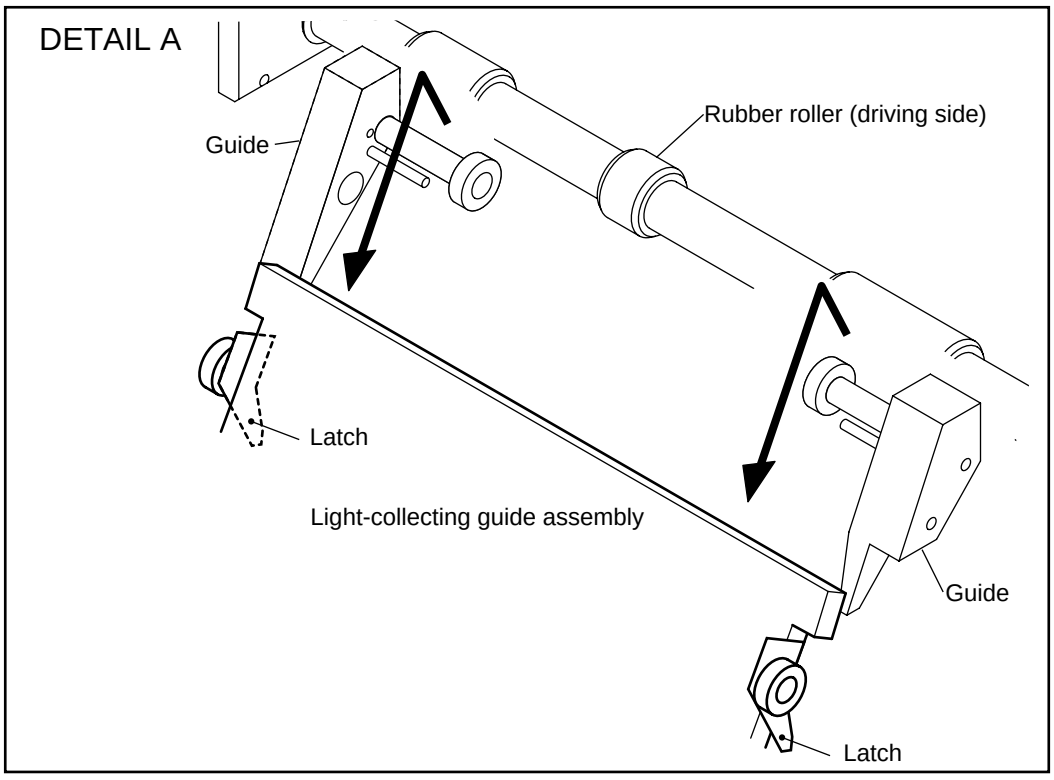
(2) Remove the bracket.



(3) Rotate the lever clockwise.

(4) Remove the light-collecting guide assembly (for the back).





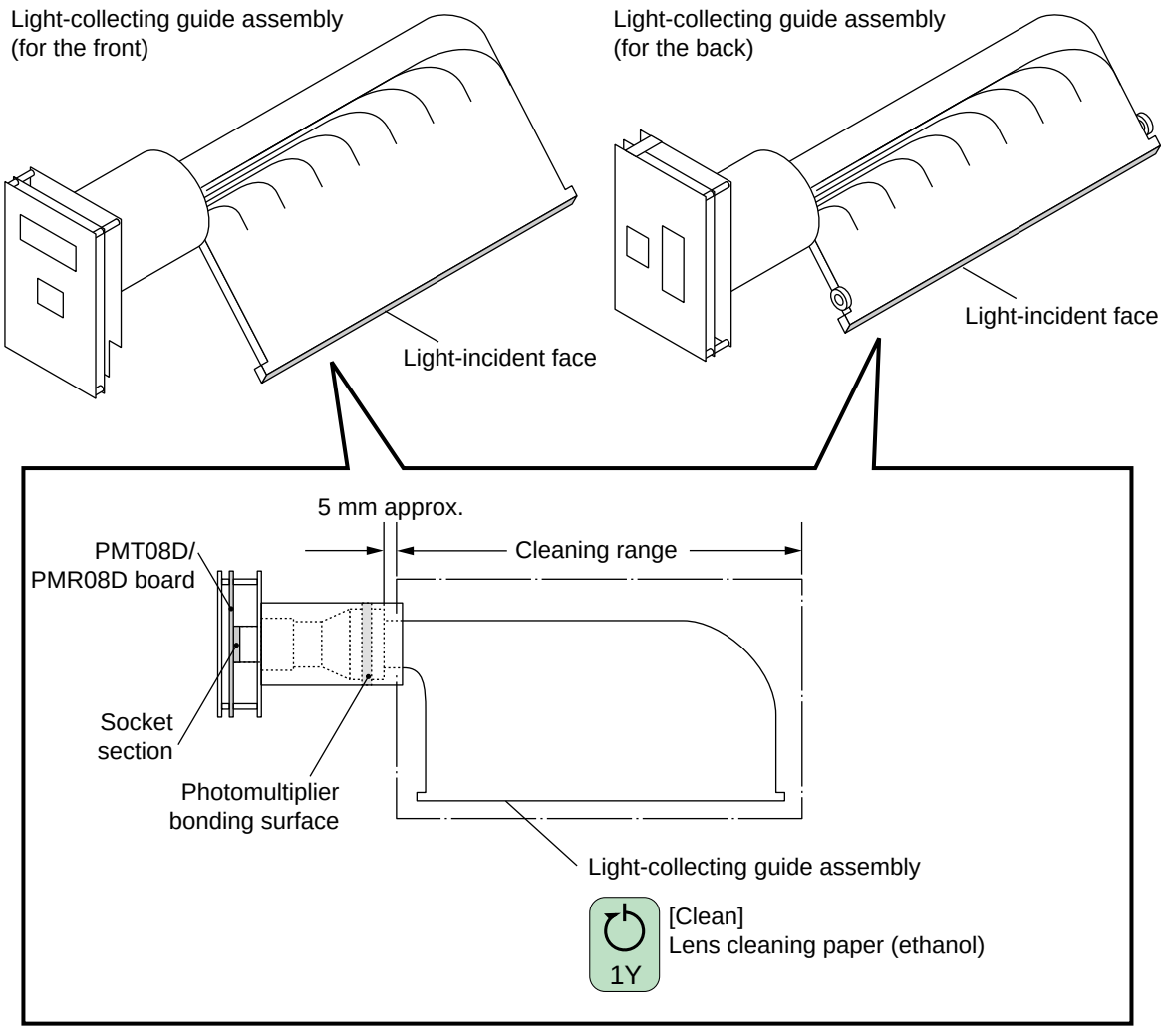
9.7 Subscanning Unit (Cleaning the Light-Collecting Guide Assemblies)

1Y

At intervals of one year, or when 60,000 IPs have been processed → Clean.

◆ *NOTES* ◆

- *Wipe the light-collecting guide assembly in one direction at a constant rate.*
- *If the lens cleaning paper becomes soiled, replace it with a new one.*
- *Do not wipe the photomultiplier bonding surface.*



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9.8 Subscanning Unit (Removing the Scanning Optics Unit)

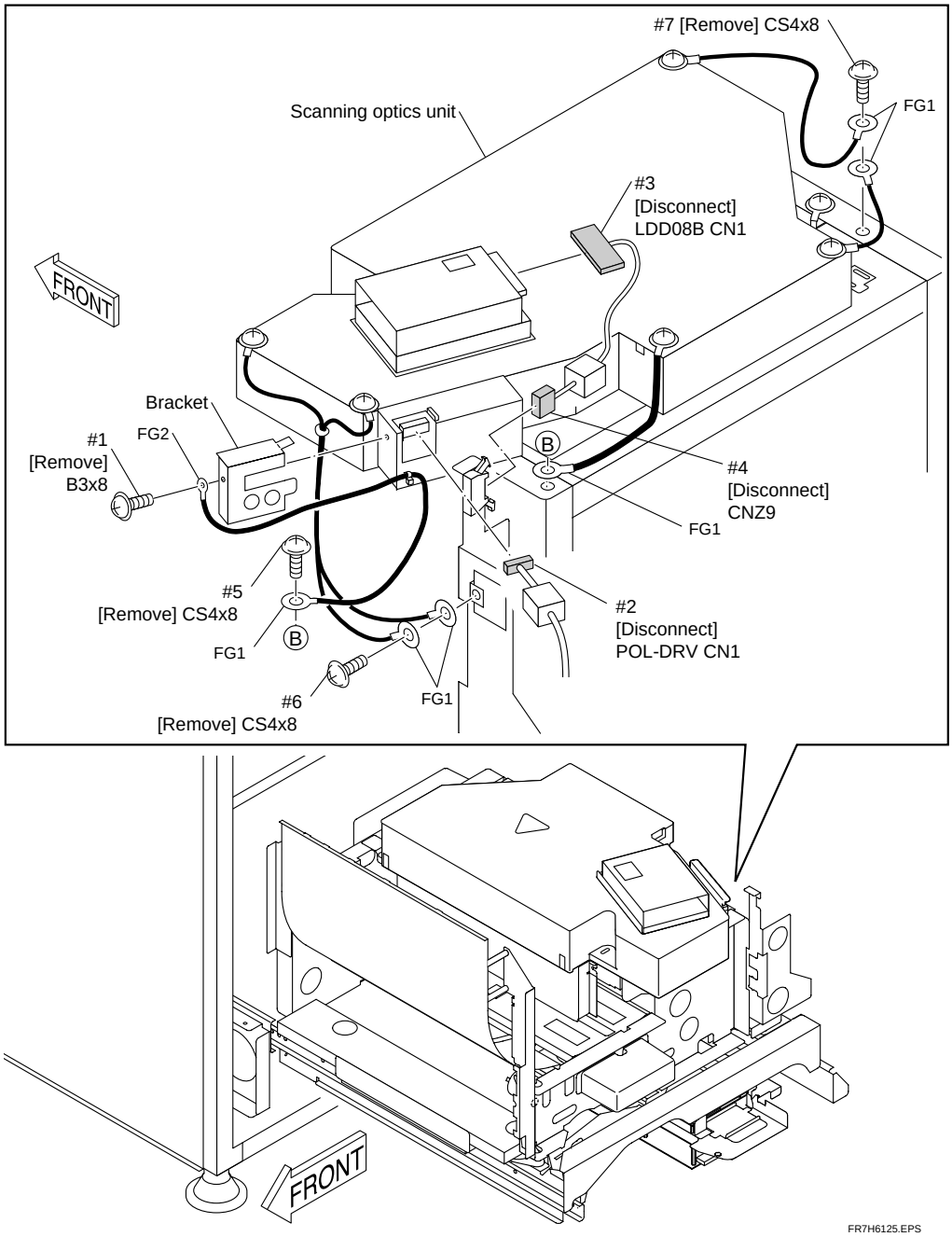
1Y

At intervals of one year, or when 60,000 IPs have been processed → Remove.

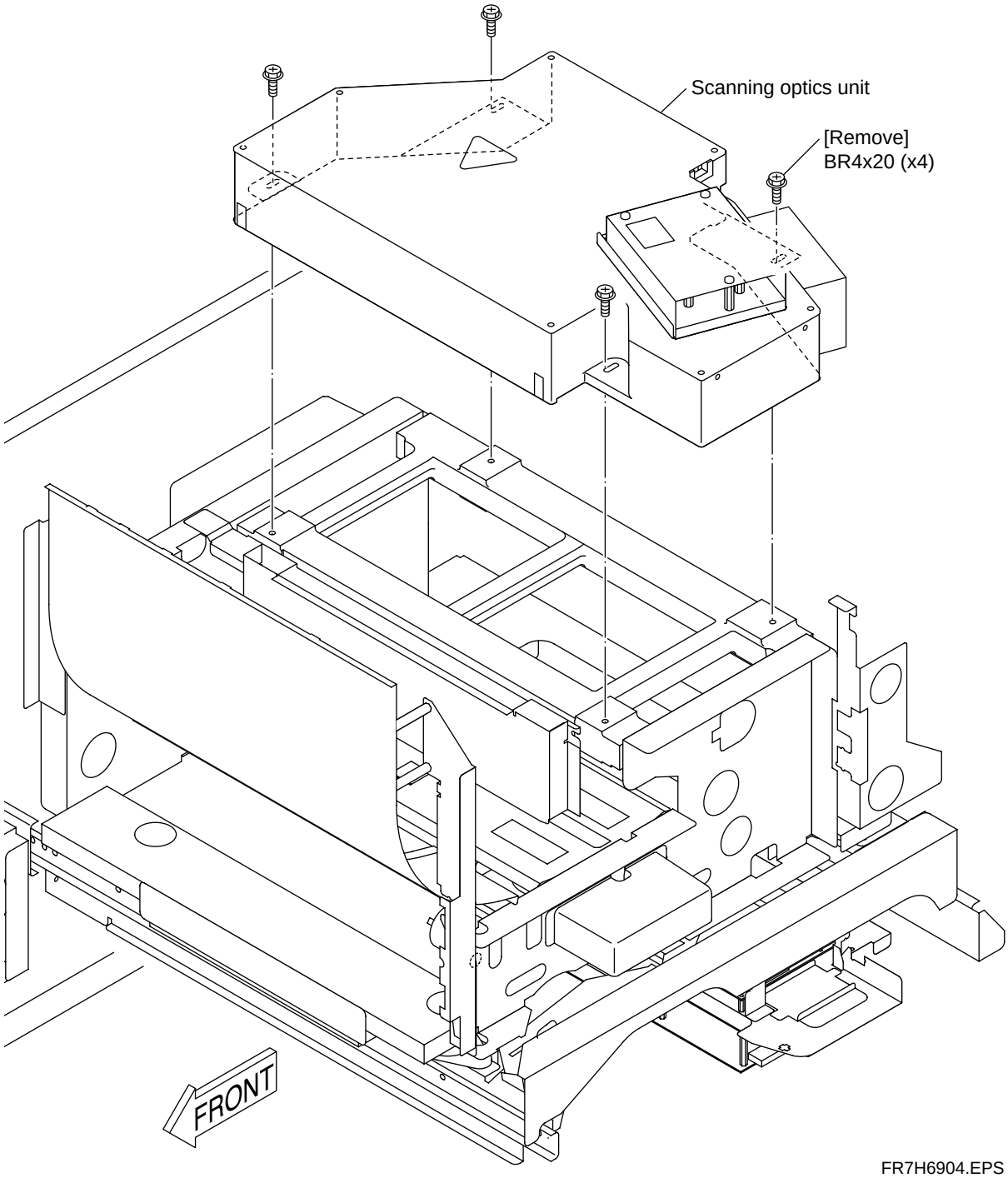
CAUTIONS

- *Carefully handle the scanning optics unit, using care not to shock it.*
- *Never put your finger into the emission port located in the bottom of the scanning optics unit.*
- *When servicing a PC board, be sure to wear a wristband to ground your body. If you do not ground your body, the buildup of static electricity on your body may damage electronic components on the PC board.*

(1) Disconnect the connectors.



(2) Remove the scanning optics unit.



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9.9 Subscanning Unit (Cleaning the Light-Collecting Mirror)

1Y

At intervals of one year, or when 60,000 IPs have been processed → Clean.

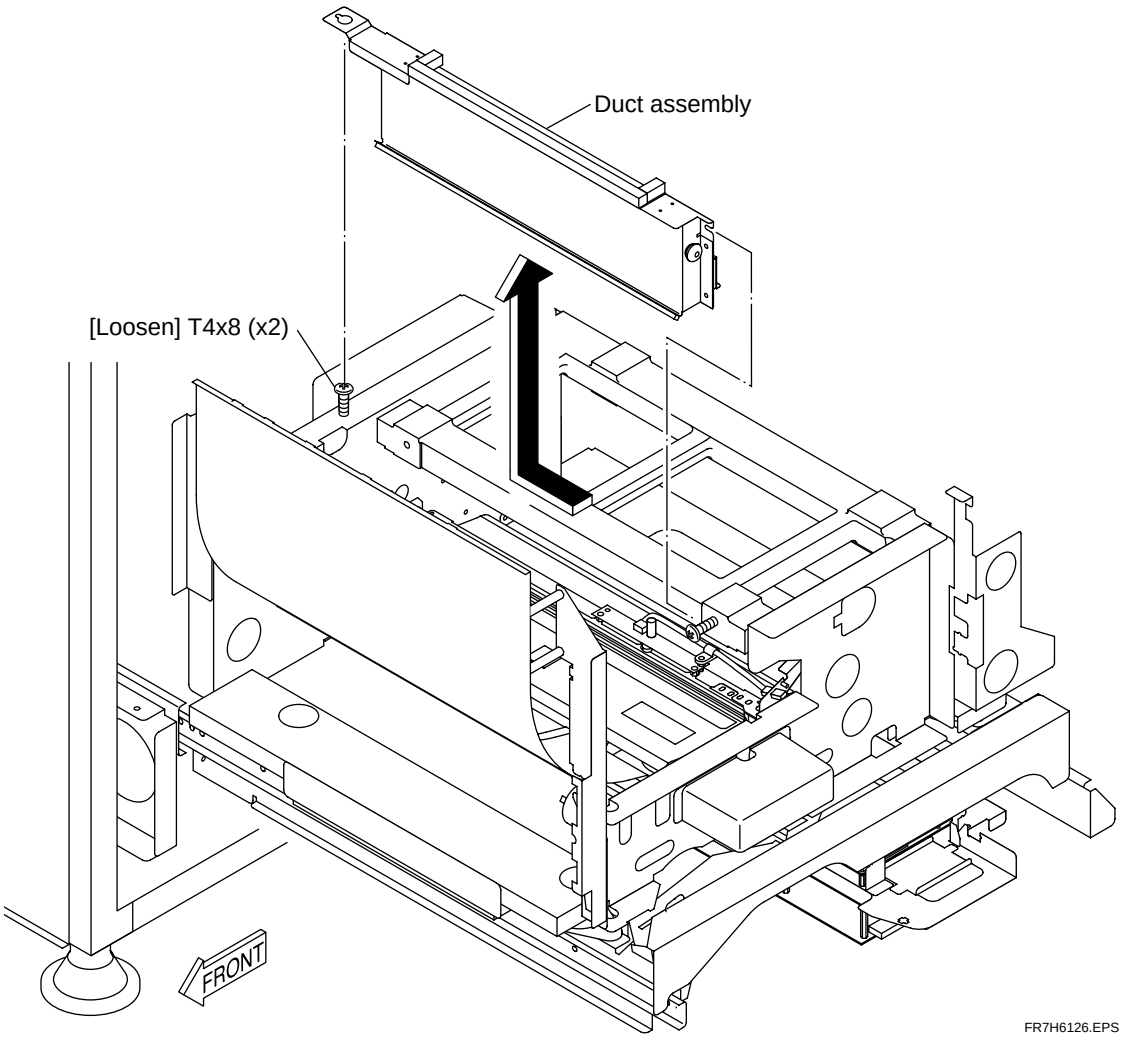
CAUTIONS

- *Wear gloves when cleaning the light-collecting mirror.*
- *Never touch the reflection surface of the light-collecting mirror even when you are wearing the gloves.*
- *Carefully handle the light-collecting mirror to avoid damage to it due to contact with surrounding objects.*

◆ NOTE ◆

Wipe the light-collecting mirror in one direction at a constant rate.

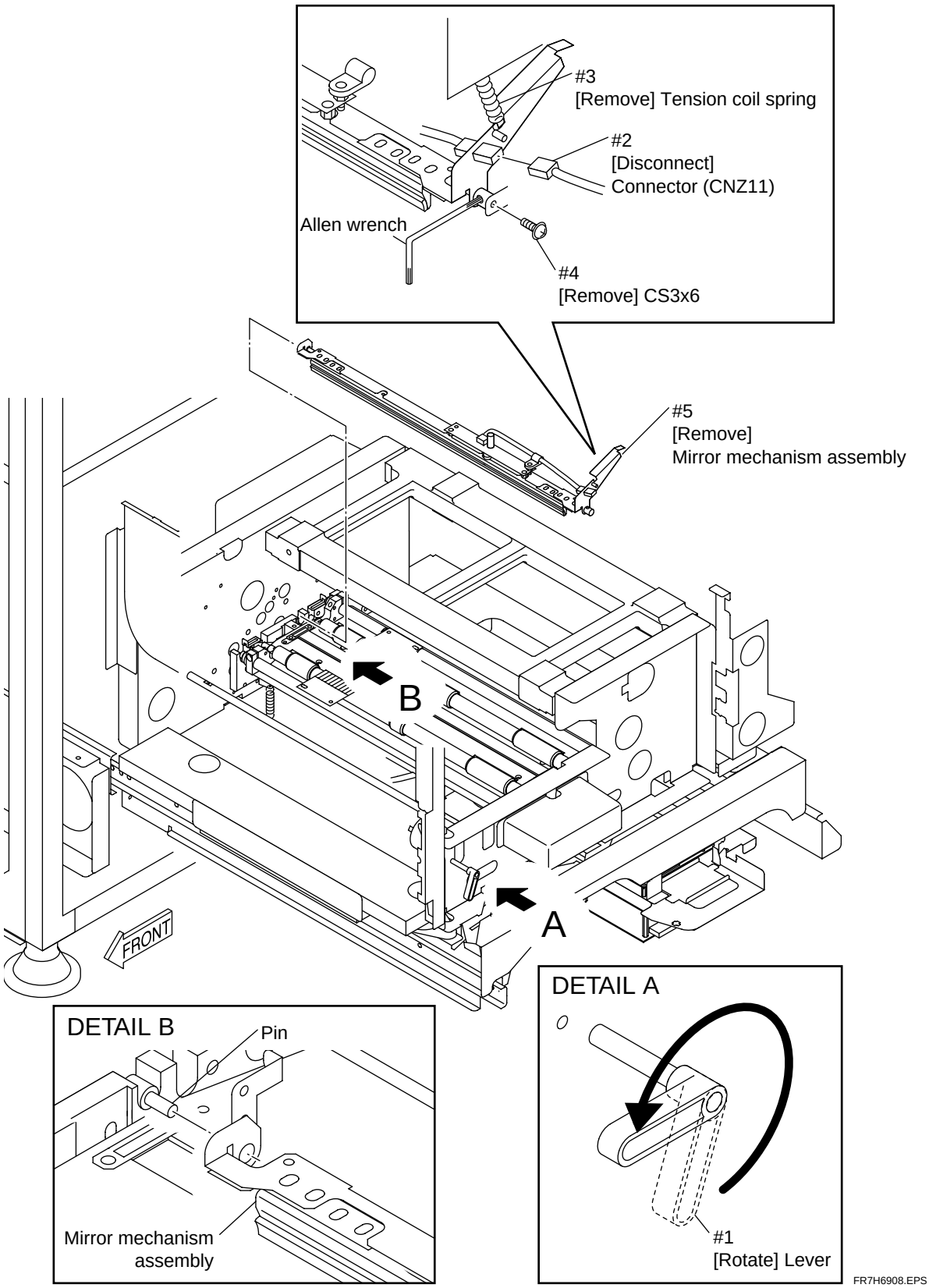
(1) Remove the duct assembly.



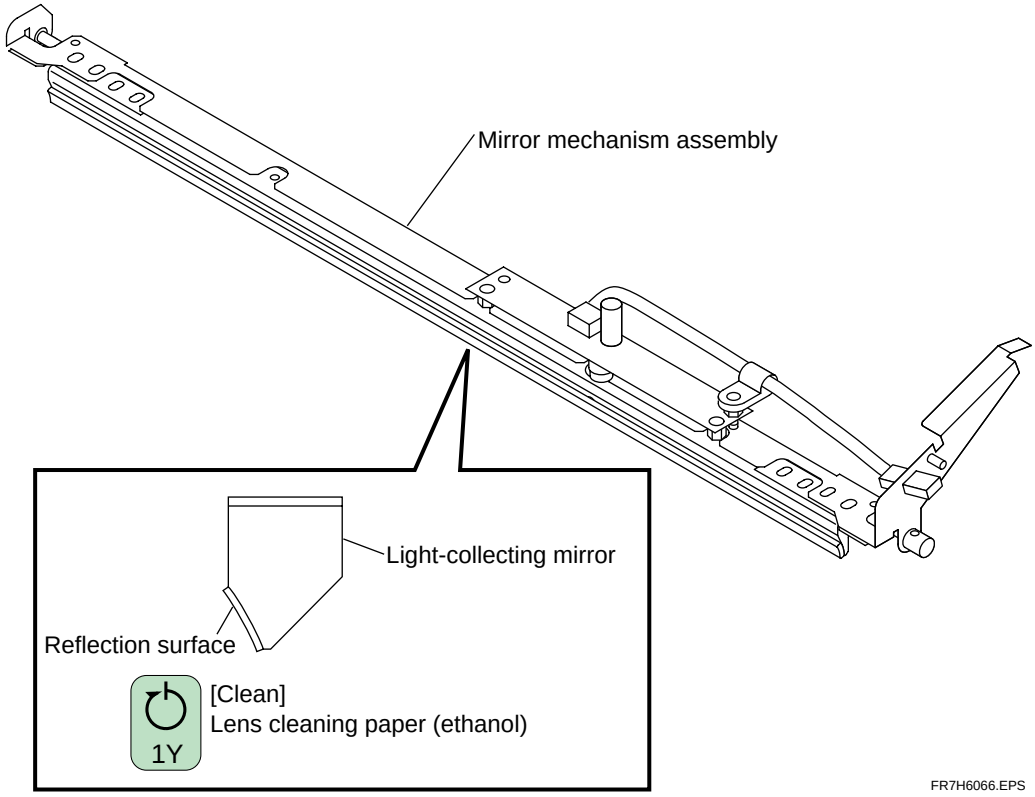
(2) Remove the mirror mechanism assembly.

◇ ***REFERENCE*** ◇

To remove the screw (CS3x6) of the mirror assembly, insert an Allen wrench or the like into the shaft of the mirror mechanism.



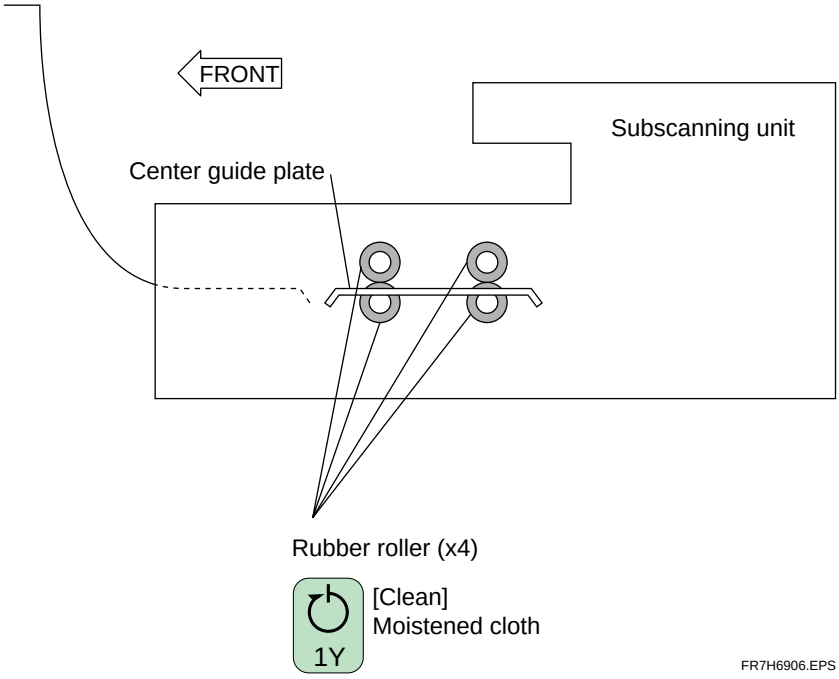
(3) Clean the reflection surface of the light-collecting mirror.



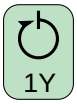
9.10 Subscanning Unit (Cleaning the Rubber Rollers)

1Y

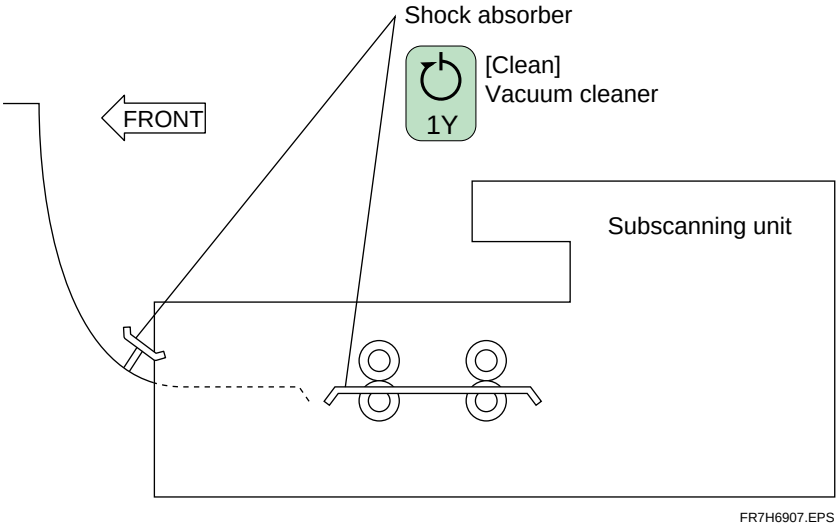
At intervals of one year, or when 60,000 IPs have been processed → Clean.



9.11 Subscanning Unit (Cleaning the Shock Absorber-Attached Center Guide Plate/Shock Absorber-Attached Guide Plate)



At intervals of one year, or when 60,000 IPs have been processed → Clean.



9.12 Subscanning Unit (Cleaning the Glass Guide)

1Y

At intervals of one year, or when 60,000 IPs have been processed → Clean.

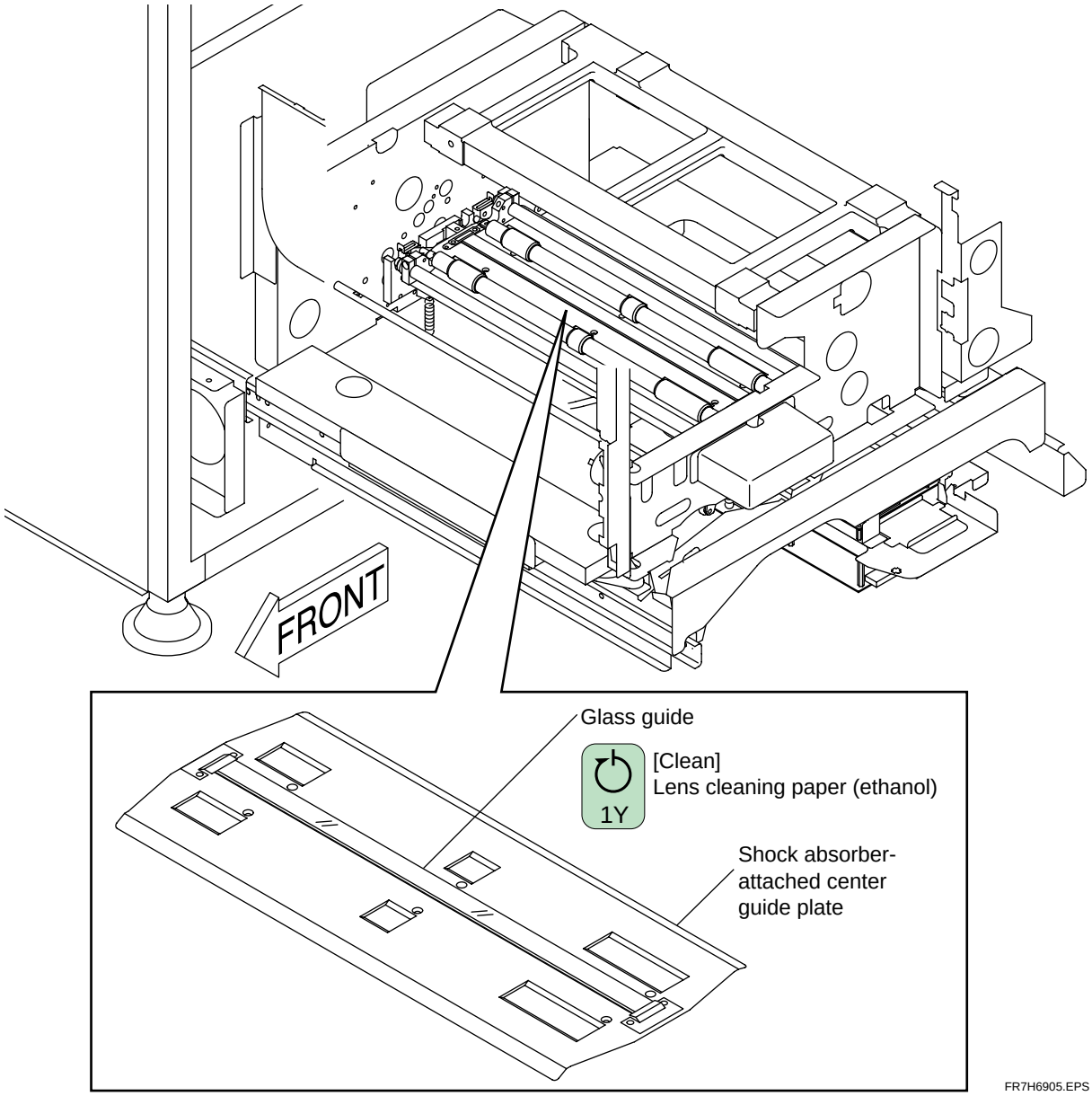
CAUTIONS

- *Wear gloves when cleaning the glass guide.*
- *Carefully handle the glass guide to avoid damage to it due to contact with surrounding objects.*

◆ NOTE ◆

When cleaning the glass guide with lens cleaning paper (ethanol), use care not to touch the shock absorber of the shock absorber-attached center guide plate.

Clean the glass guide.



9.13 Subscanning Unit (Replacing the Shock Absorber-Attached Center Guide Plate/Shock Absorber-Attached Guide Plate)

3Y

At intervals of three years, or when 180,000 IPs have been processed

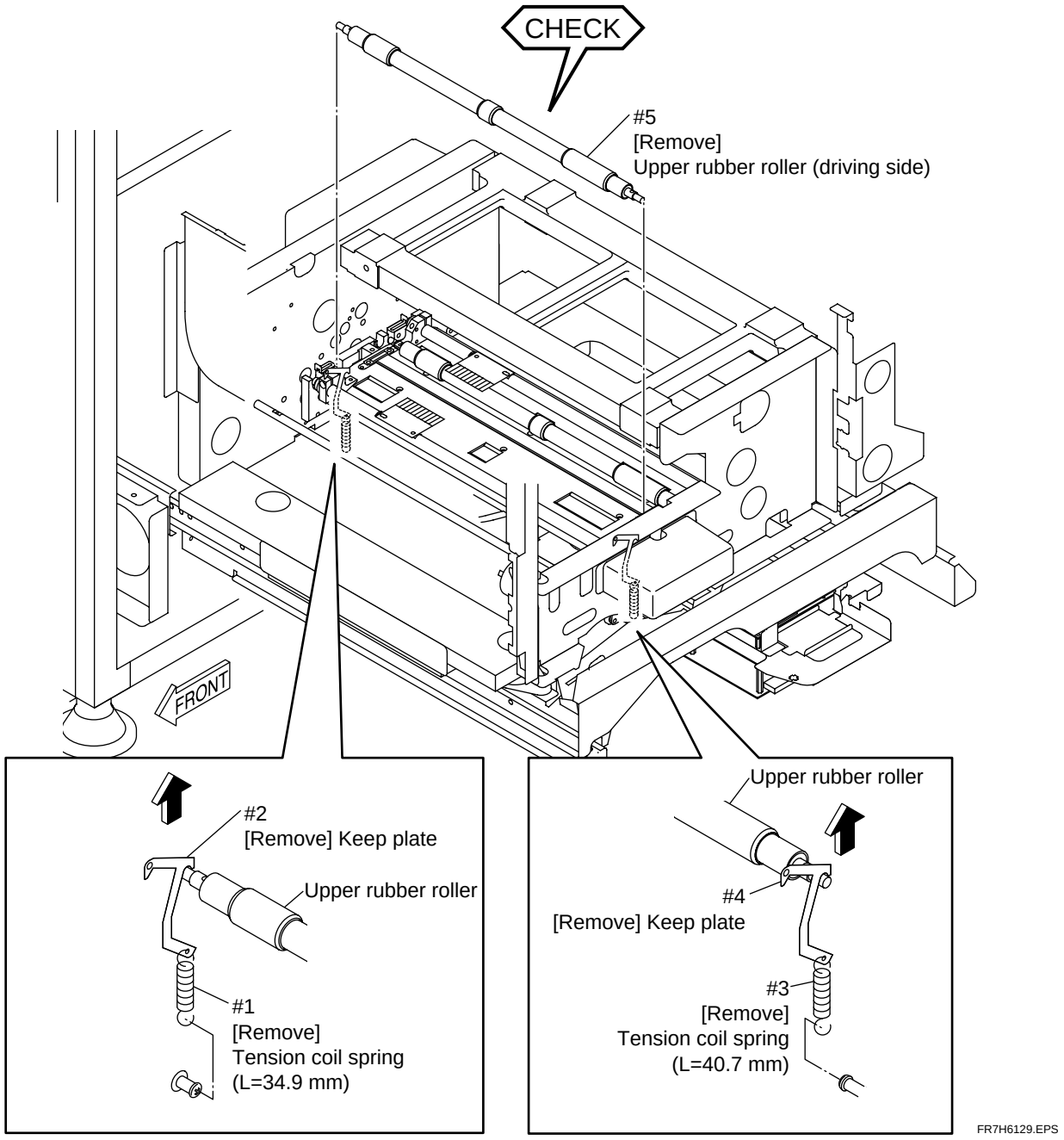
→ Replace.

CAUTION

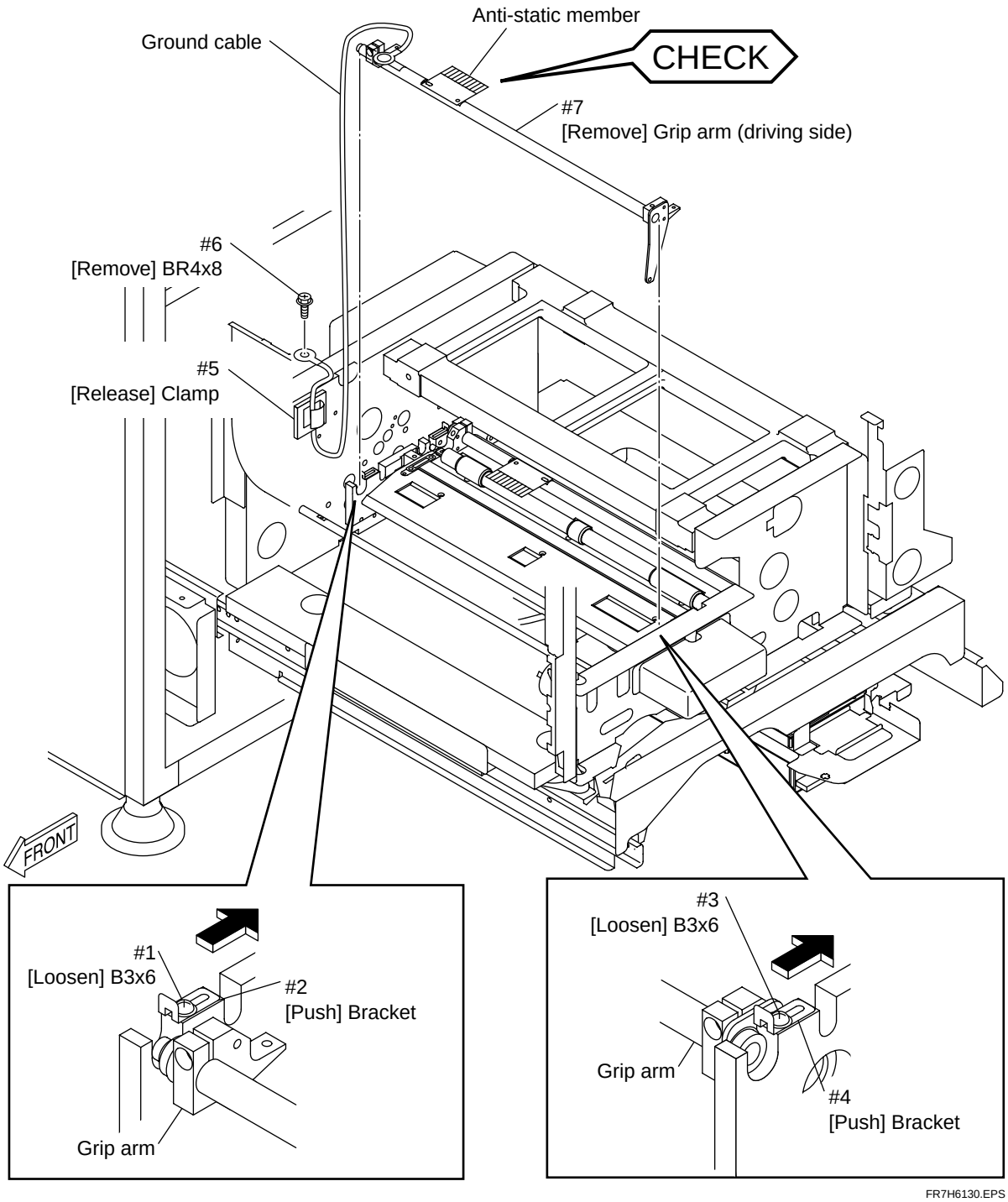
Carefully handle the glass guide to avoid damage to it due to contact with surrounding objects.

■ Shock Absorber-Attached Center Guide Plate

(1) Remove the upper rubber roller (driving side).



(2) Remove the grip arm (driving side)



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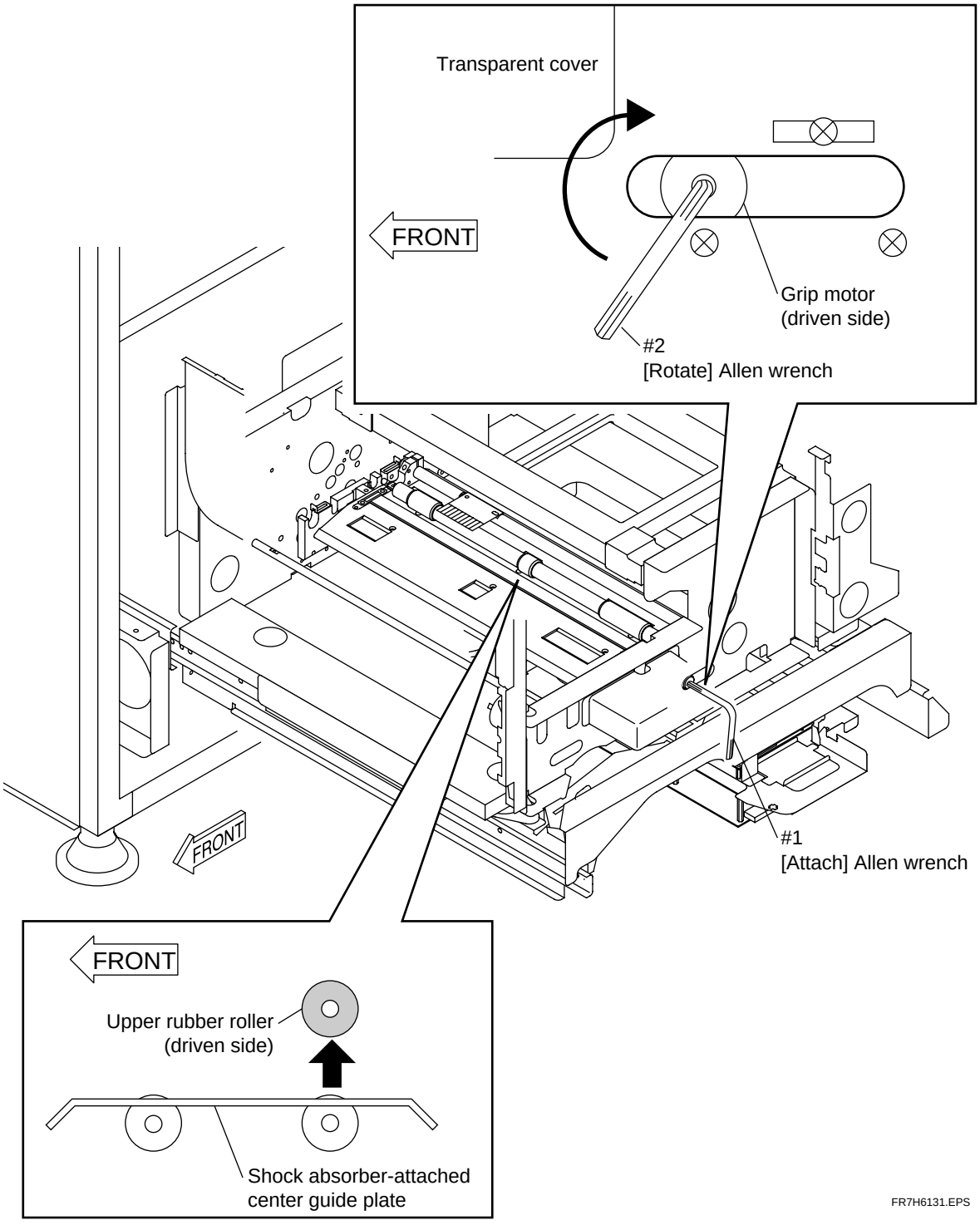
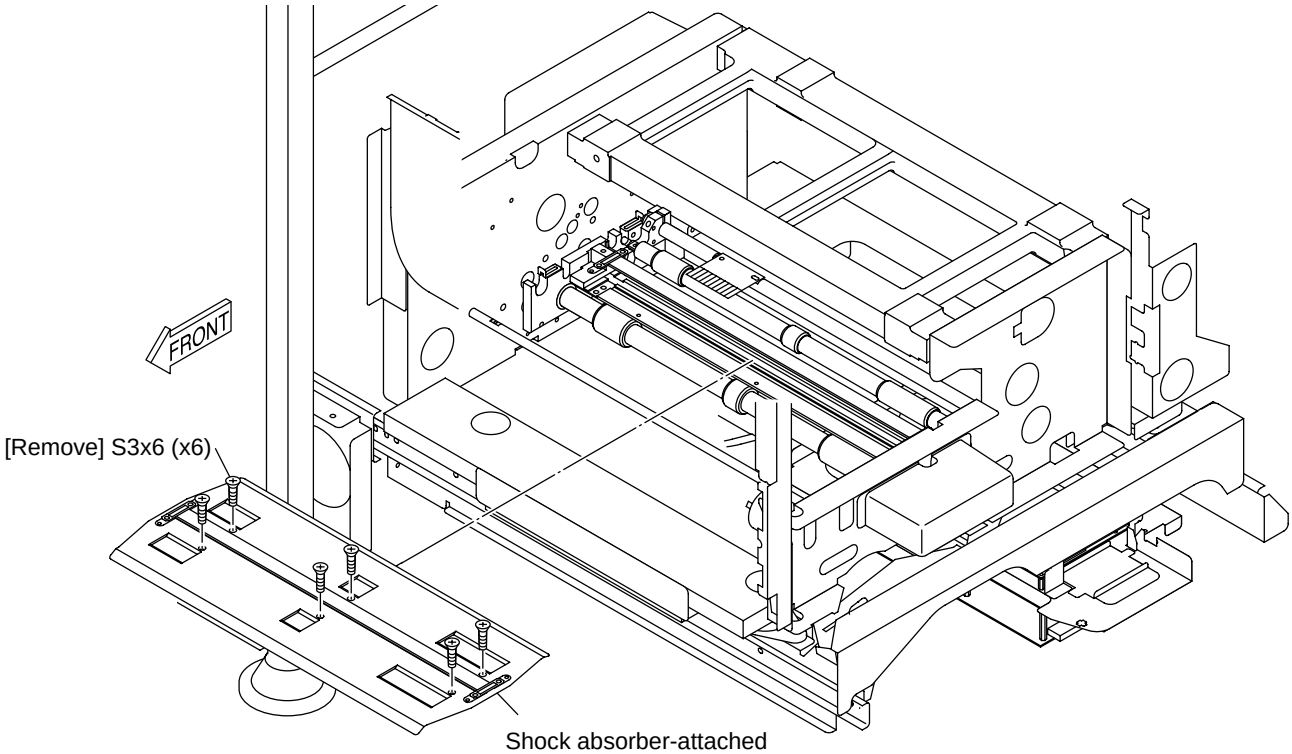
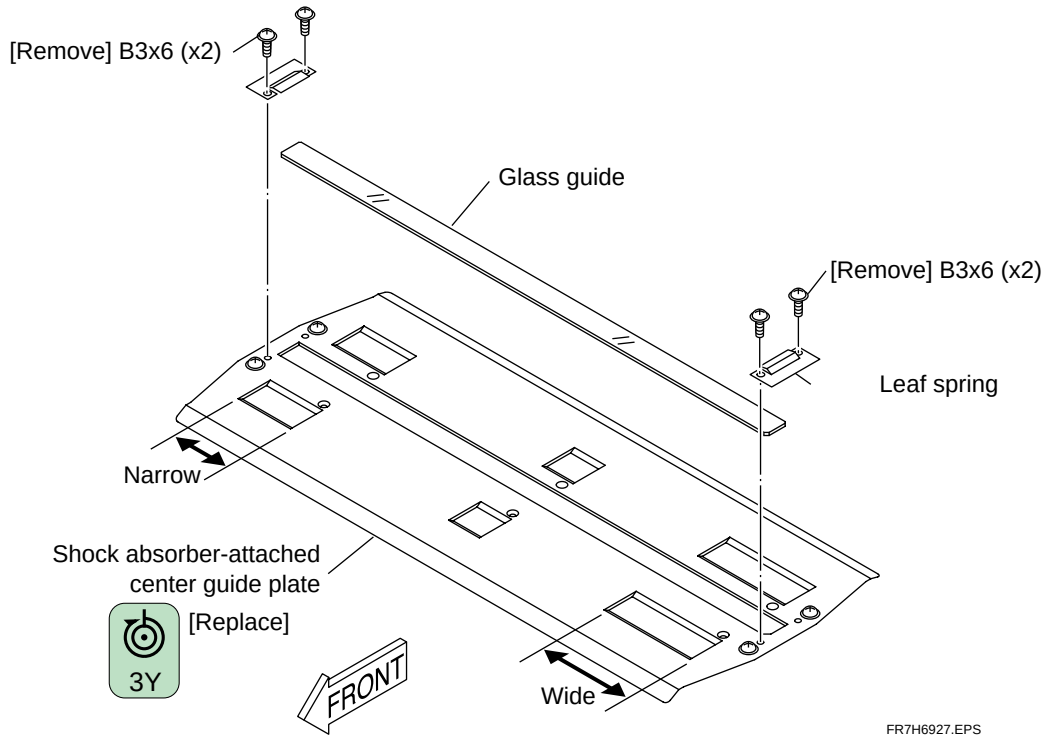
(3) Release the grip of the upper rubber roller (driven side).



(4) Remove the shock absorber-attached center guide plate.



(5) Replace the shock absorber-attached center guide plate.



(6) Reversing the procedures of steps (1) through (5), reinstall the shock absorber-attached center guide plate.

◆ ***INSTRUCTION*** ◆

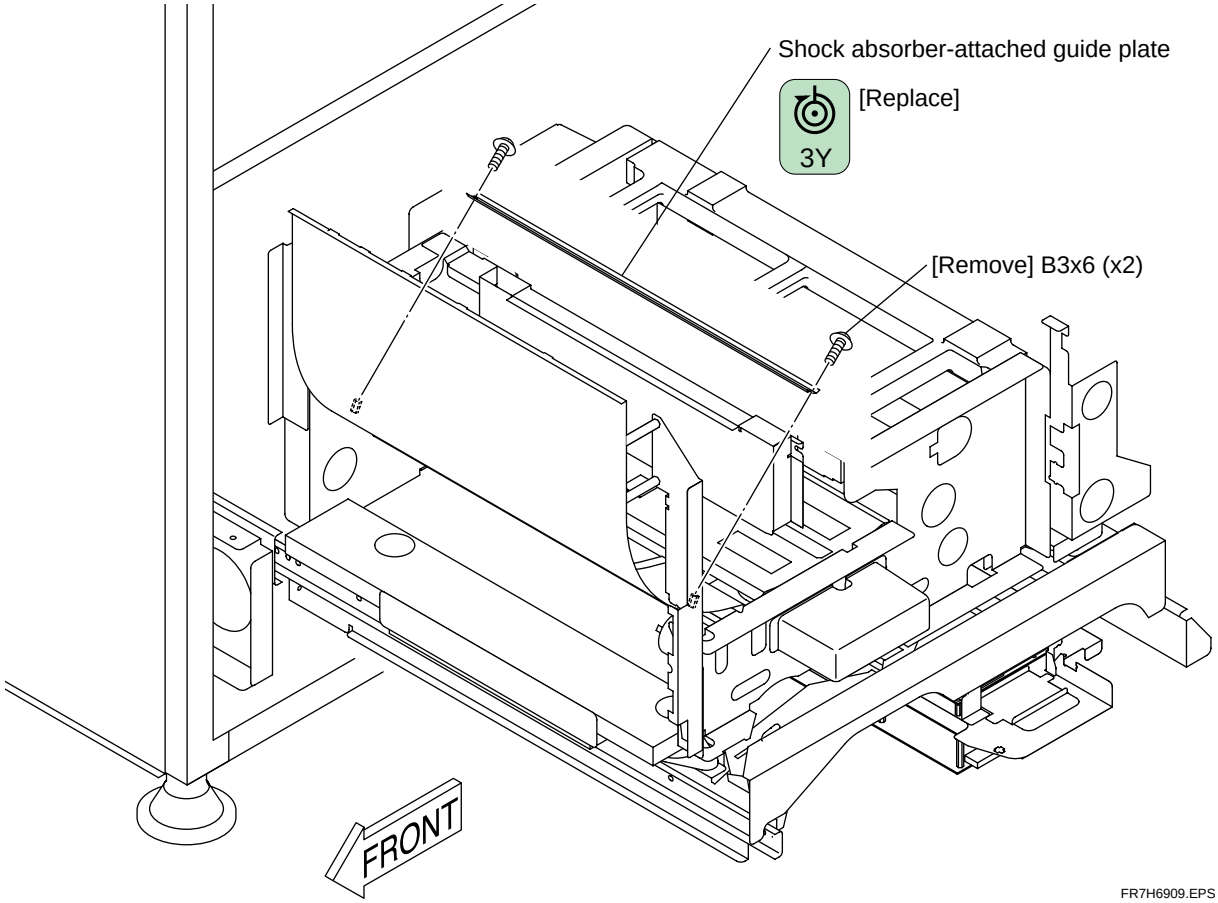
The extension spring size varies with the mounting location. Pay due attention to the extension spring mounting locations.

◆ ***CHECKS*** ◆

• Check that the installed rubber roller is properly oriented.
• Make sure that the anti-static members are brought into contact with the rollers.

■ Shock Absorber-Attached Guide Plate

Replace the shock absorber-attached guide plate.



9.14 Subscanning Unit (Installing the Scanning Optics Unit)

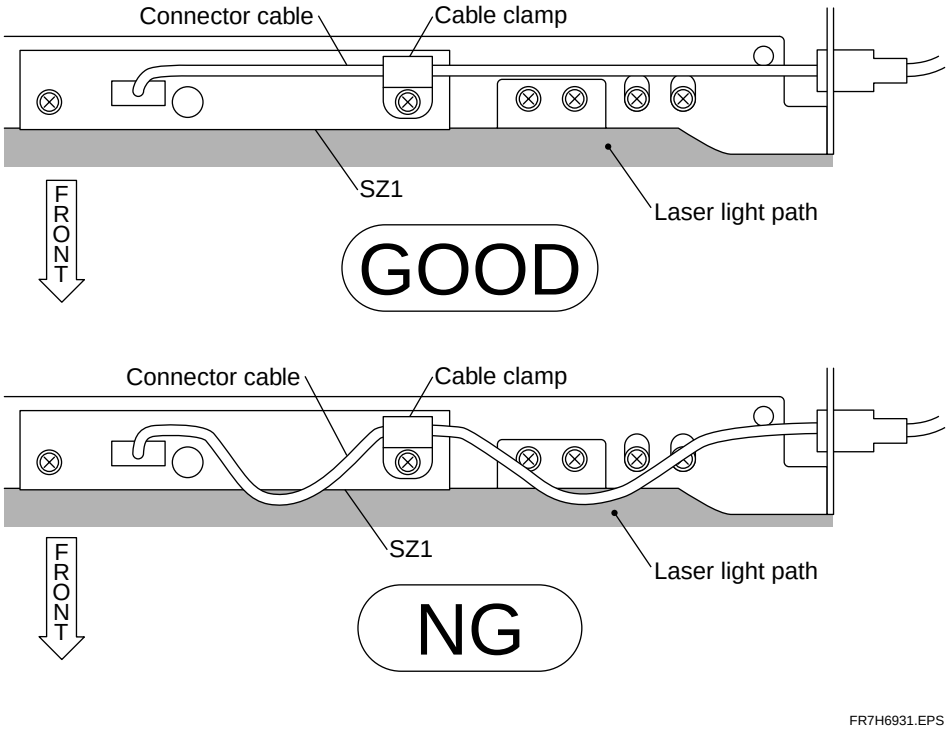
1Y

At intervals of one year, or when 60,000 IPs have been processed → Install

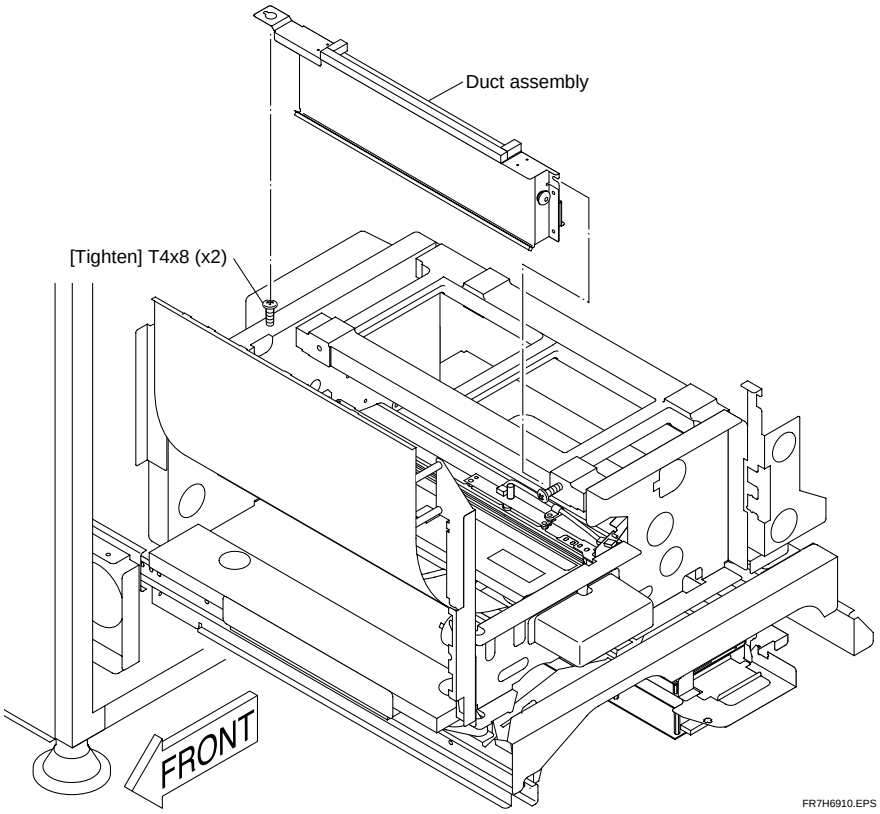
(1) Reversing the procedures described in “9.9 Subscanning Unit (Cleaning the Light-Collecting Mirror),” install the mirror mechanism assembly.

◆ ***NOTE*** ◆

Make sure that the slack of the SZ1 connector cable is not sticking out on the reflection surface side of the light-collecting mirror. If the cable slack is sticking out on the reflection surface side of the light-collecting mirror, secure the laser light path with reference to the illustrations below.



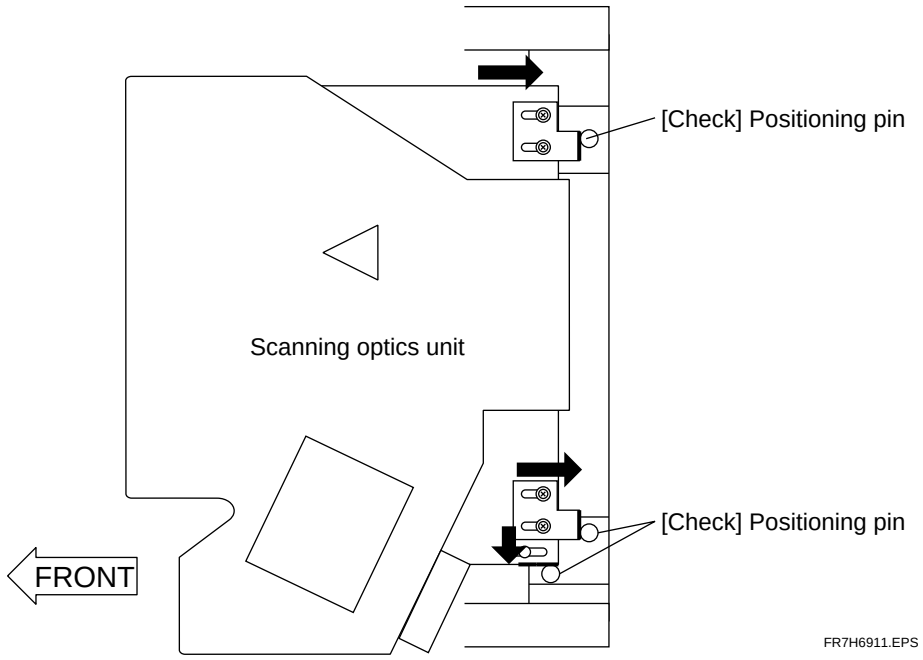
(2) Install the duct assembly.



(3) Reversing the procedures described in “9.8 Subscanning Unit (Removing the Scanning Optics Unit),” install the scanning optics unit.

◆ ***CHECK*** ◆

Make sure that the scanning optical unit is brought into contact with the positioning pins.



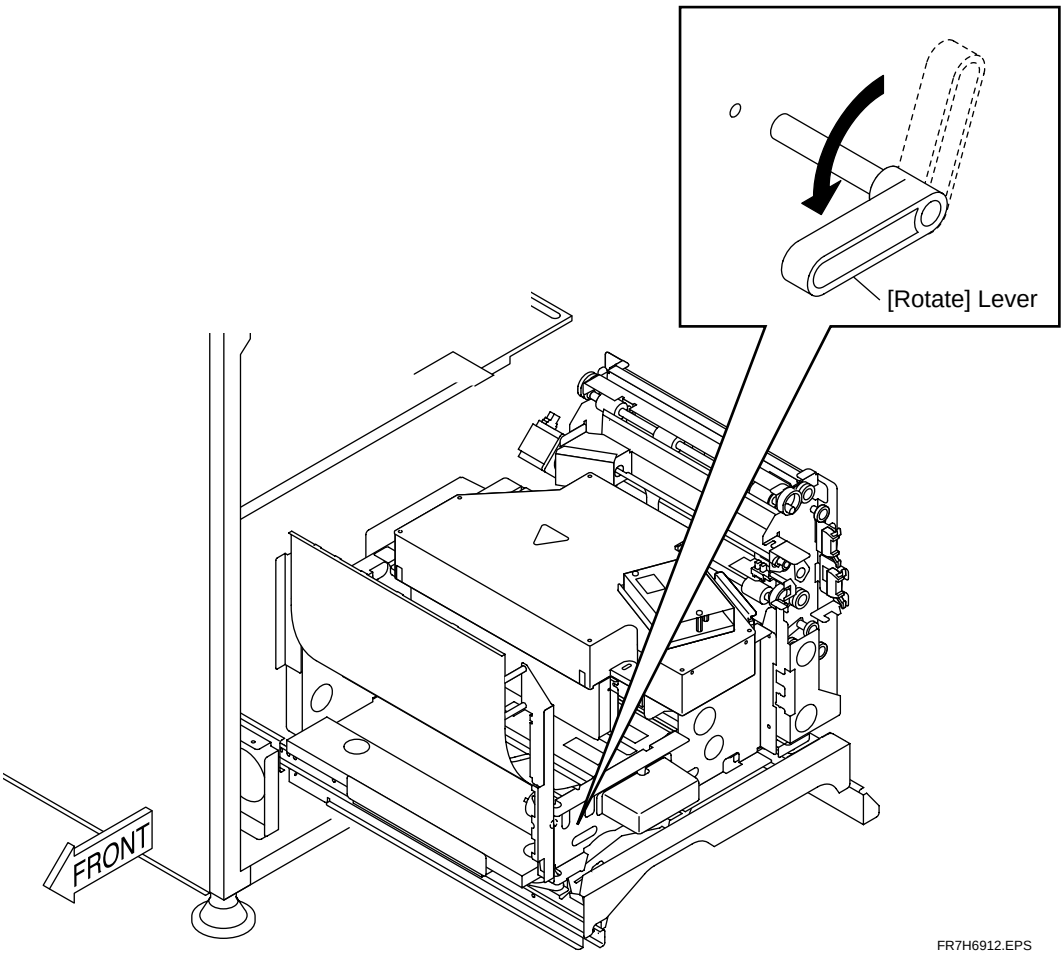
9.15 Subscanning Unit (Installing the Light-Collecting Guide Assemblies)

1Y

At intervals of one year, or when 60,000 IPs have been processed → Install

■ Light-Collecting Guide Assembly (for the Front)

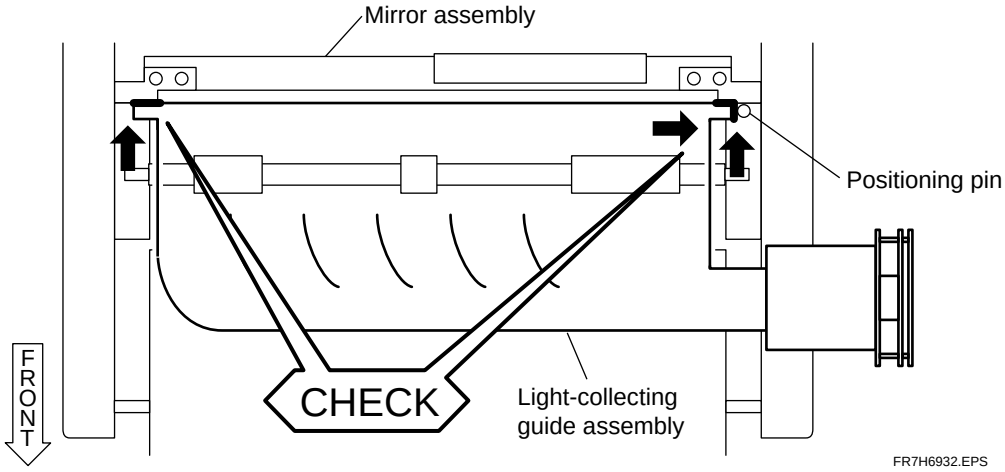
(1) Rotate the lever counterclockwise.

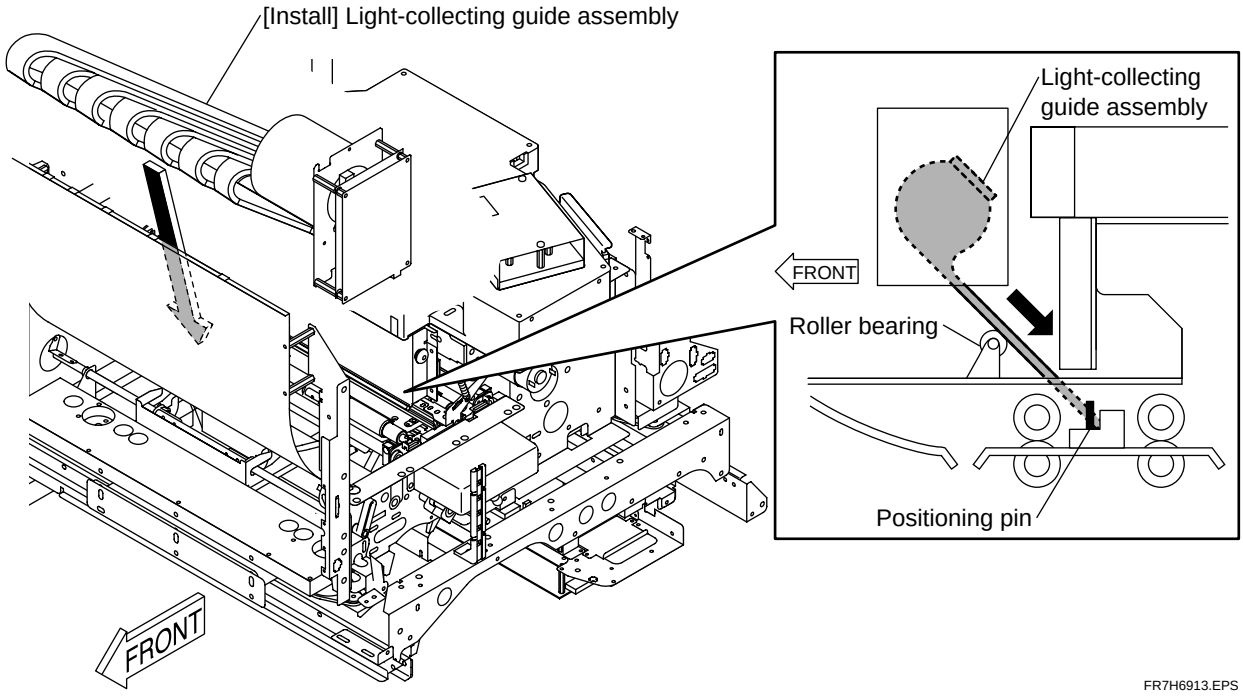


(2) Install the light-collecting guide assembly (for the front)

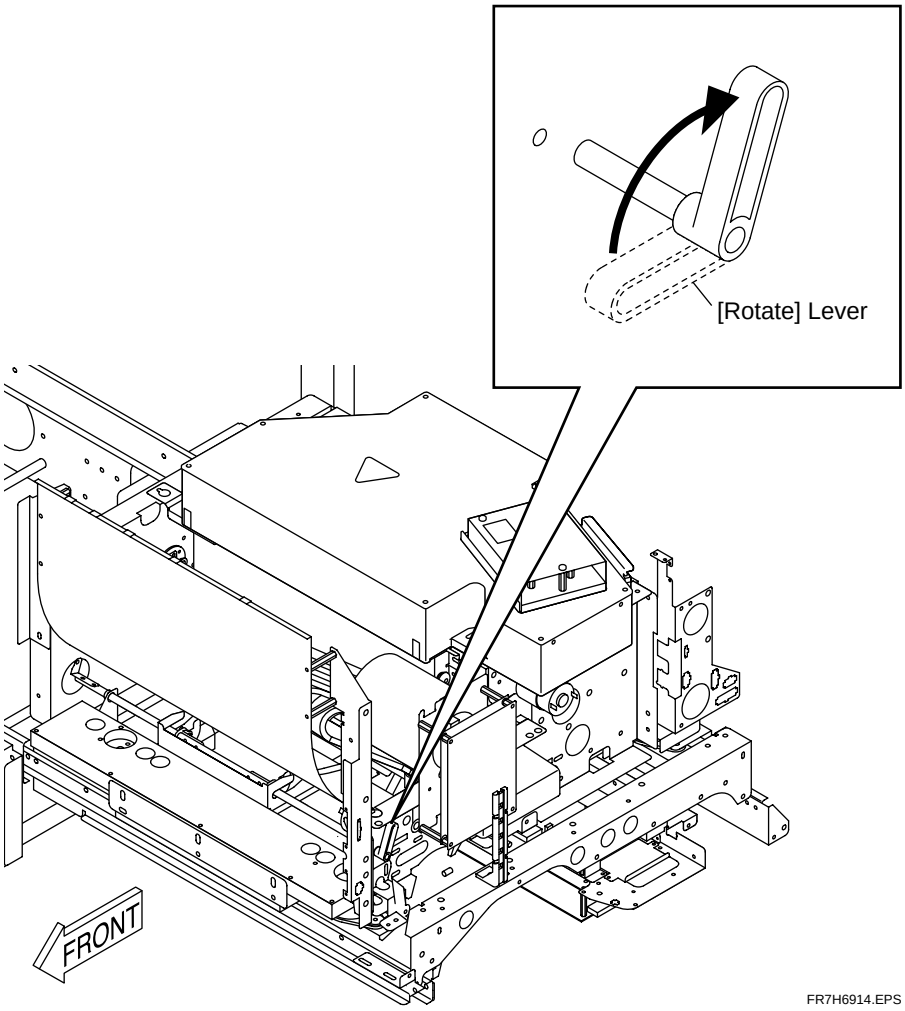
◆ ***INSTRUCTION*** ◆

When installing the light-collecting guide assembly, properly position it by pressing it against the mirror assembly and positioning pin.

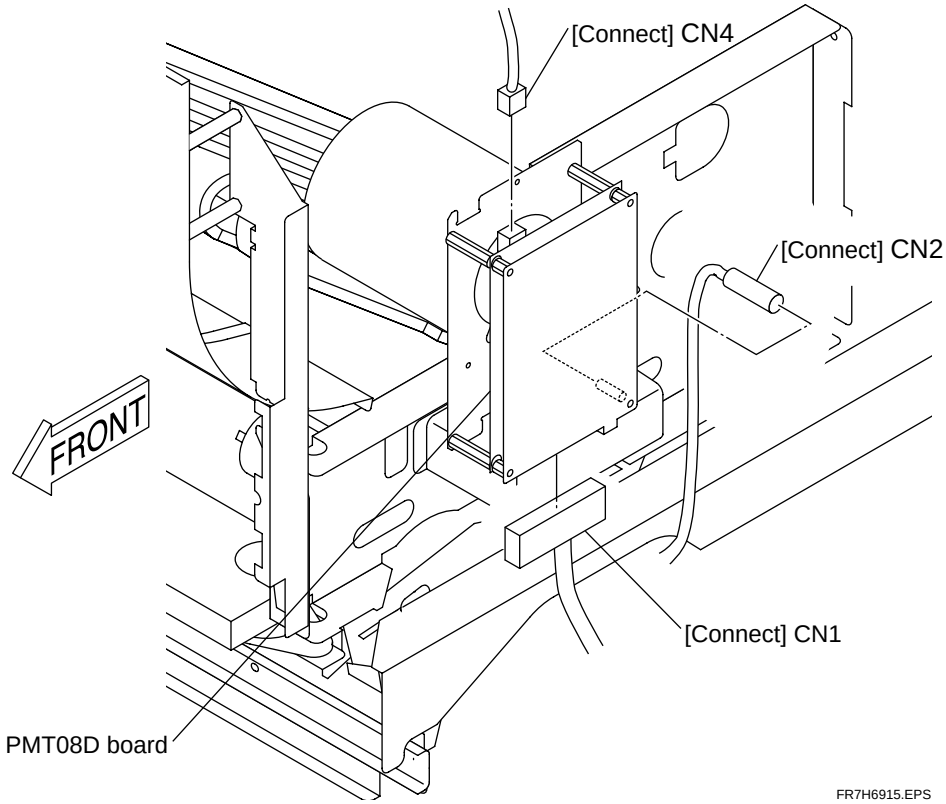




(3) Rotate the lever clockwise.



(4) Connect the PMT08D board connectors.



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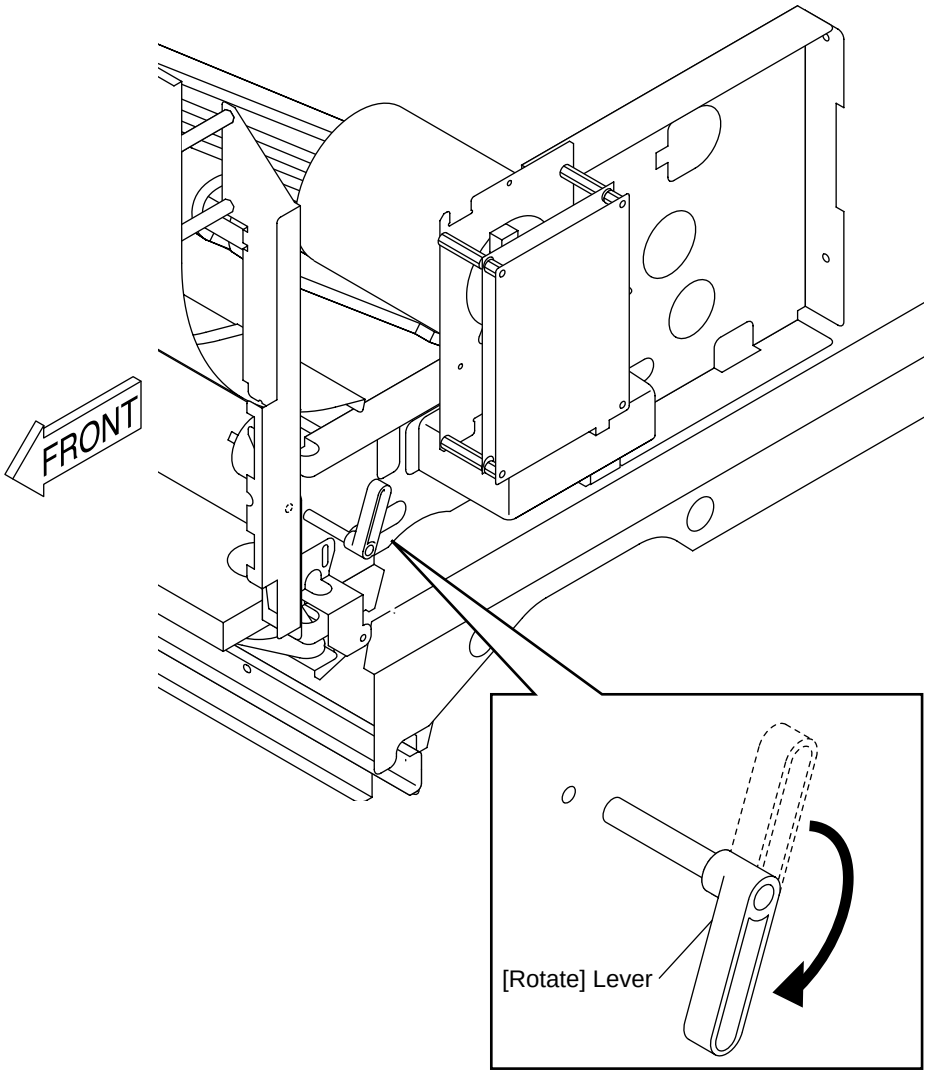
■ Light-Collecting Guide Assembly (for the Back)

(1) Rotate the lever clockwise.



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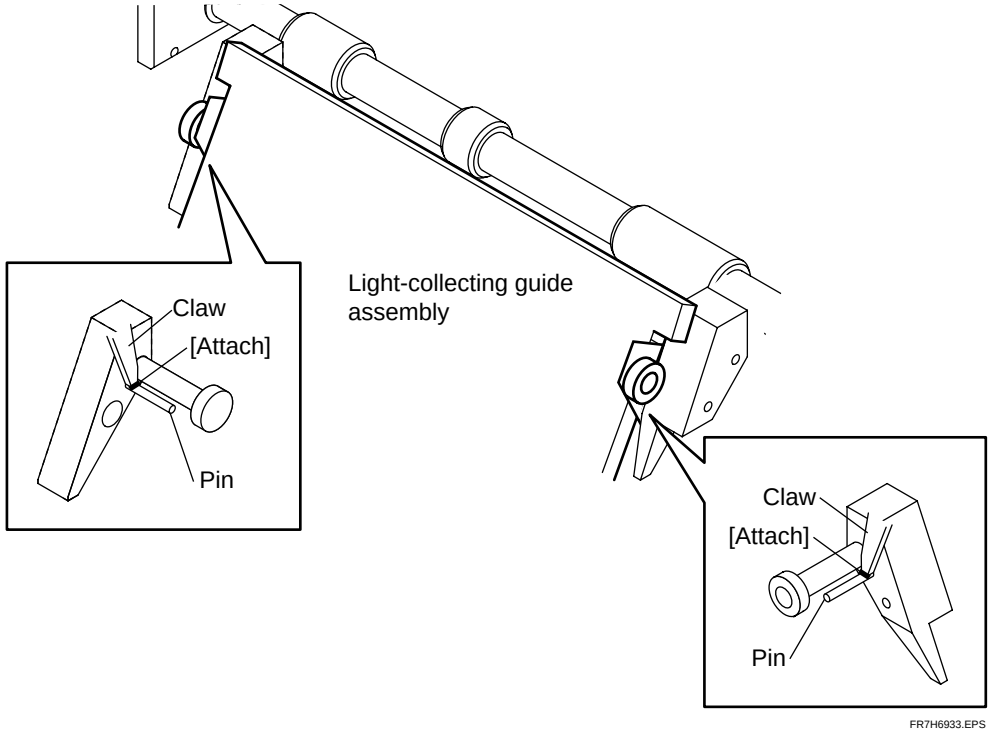
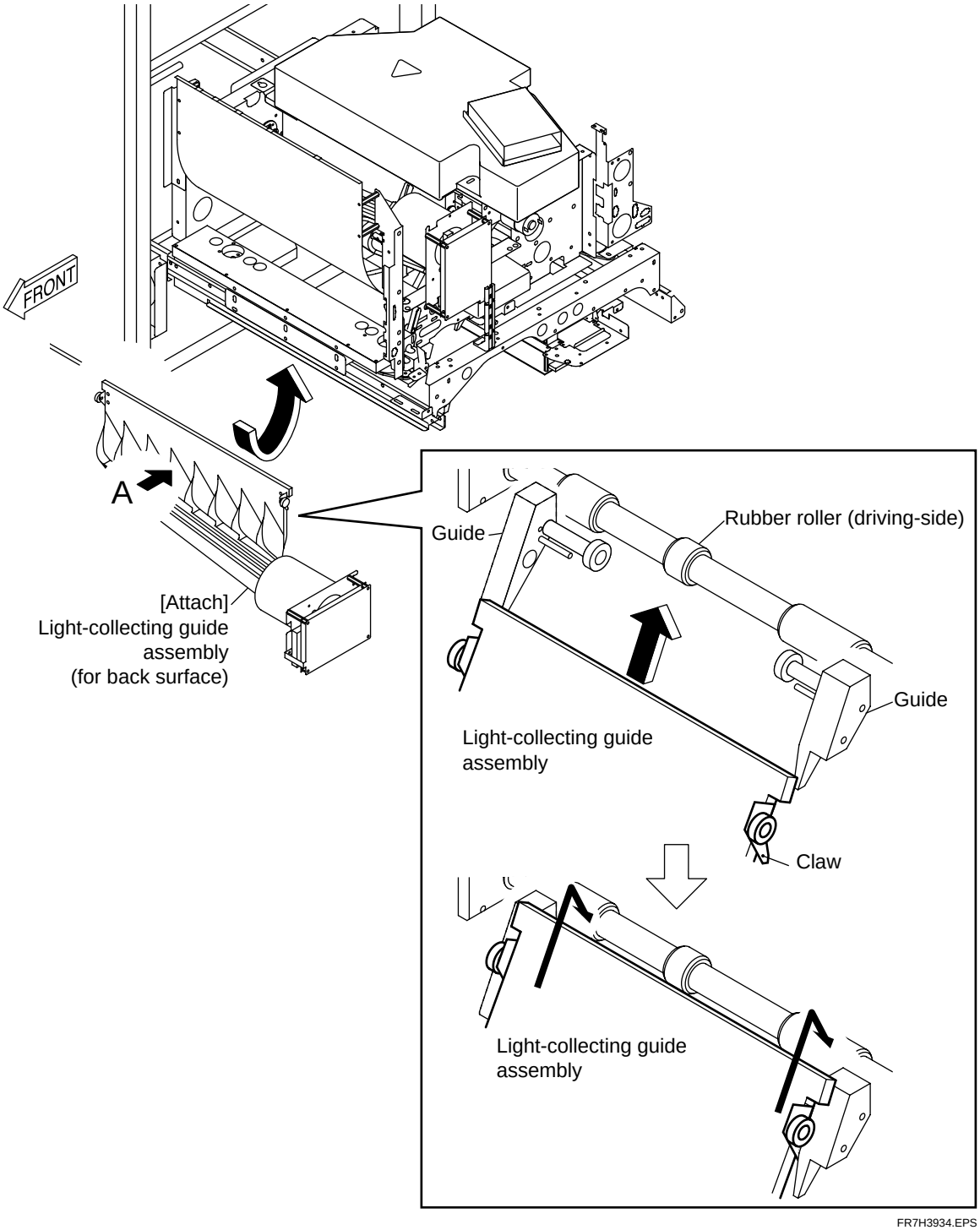
(2) Install the light-collecting guide assembly (for back surface).

◆ ***NOTE*** ◆

When installing the light-collecting guide assembly, ensure that its claws are positioned above the guide pins.





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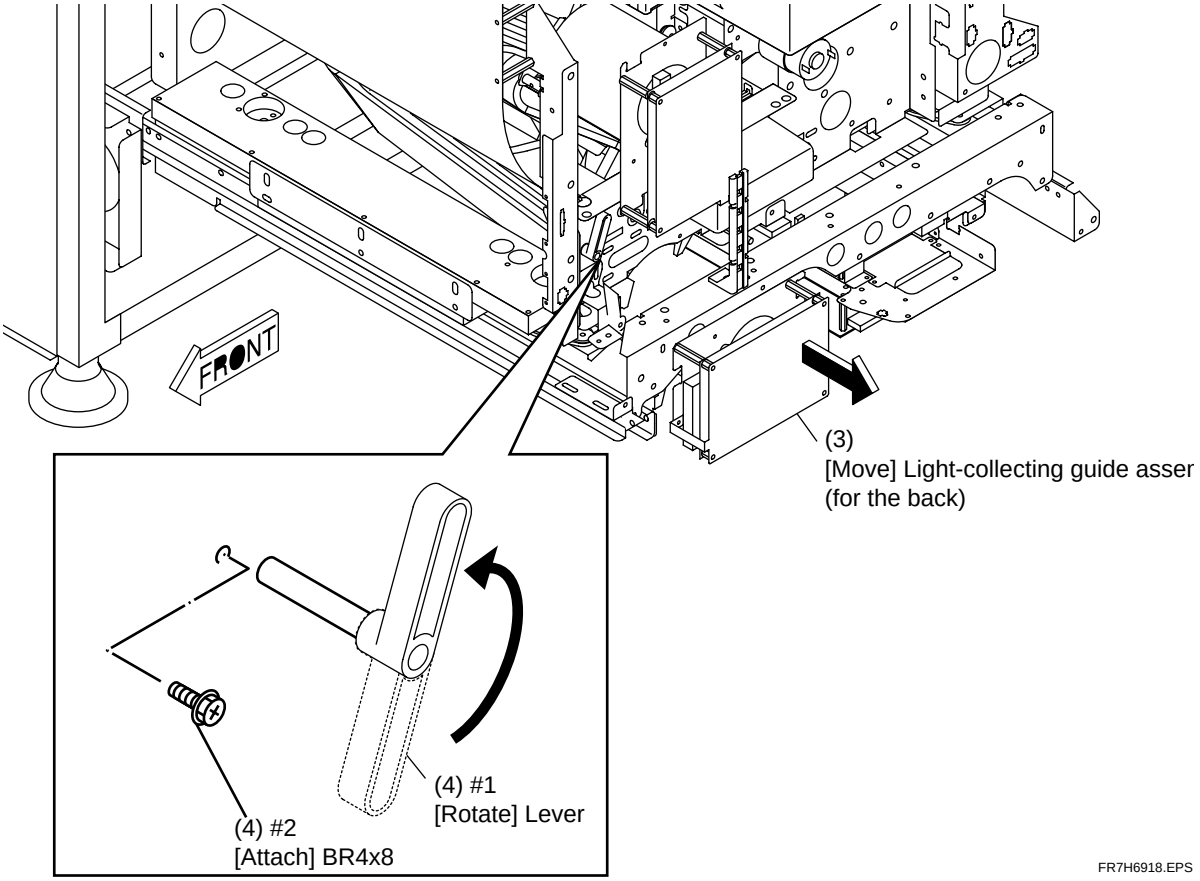
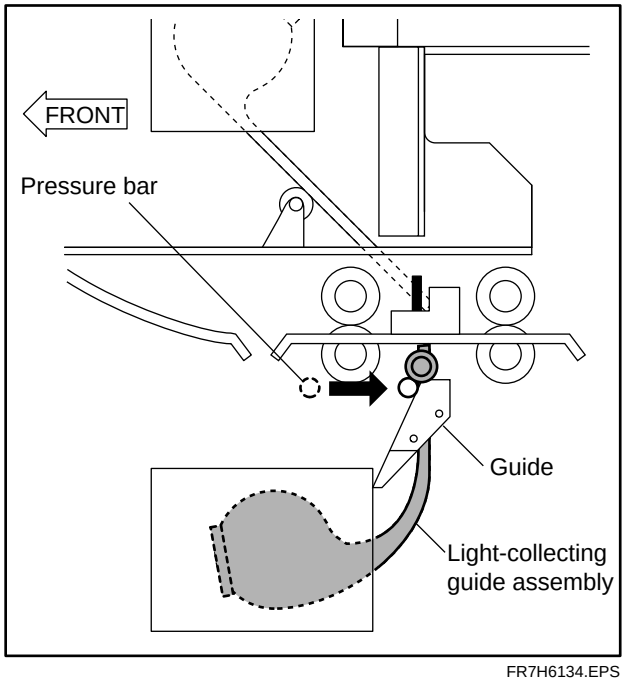
(3) Move the light-collecting guide assembly (for the rear) toward the reference plane.

(4) Rotate the lever in the direction of the arrow in the figure below to secure the light-collecting guide assembly (for back surface).



◇ *REFERENCE* ◇

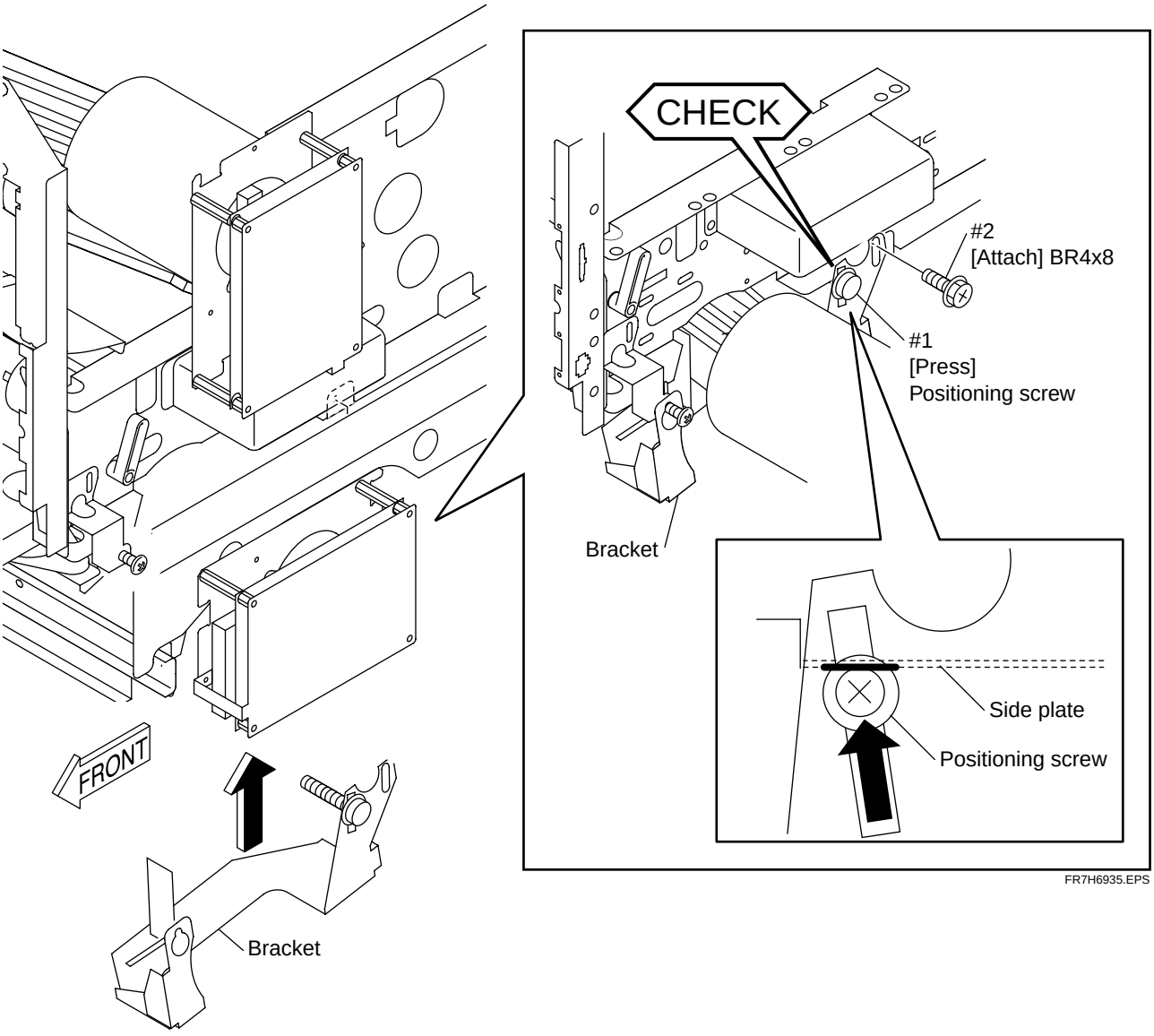
When the lever is pressed, the pressure bar secures the light-collecting guide in place.



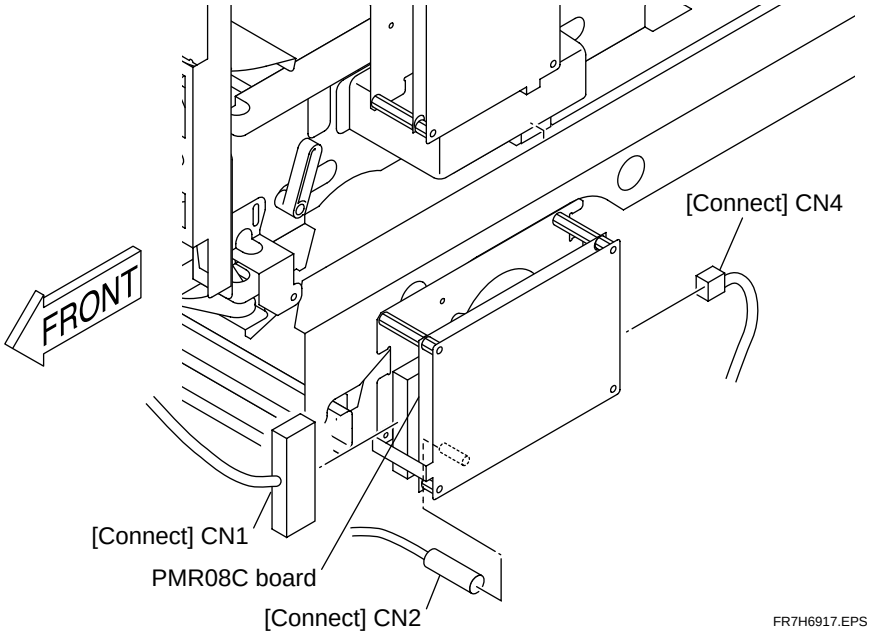
(5) Attach the bracket.

◆ ***INSTRUCTION*** ◆

When installing the bracket, secure it while pressing its positioning screw against the side plate.

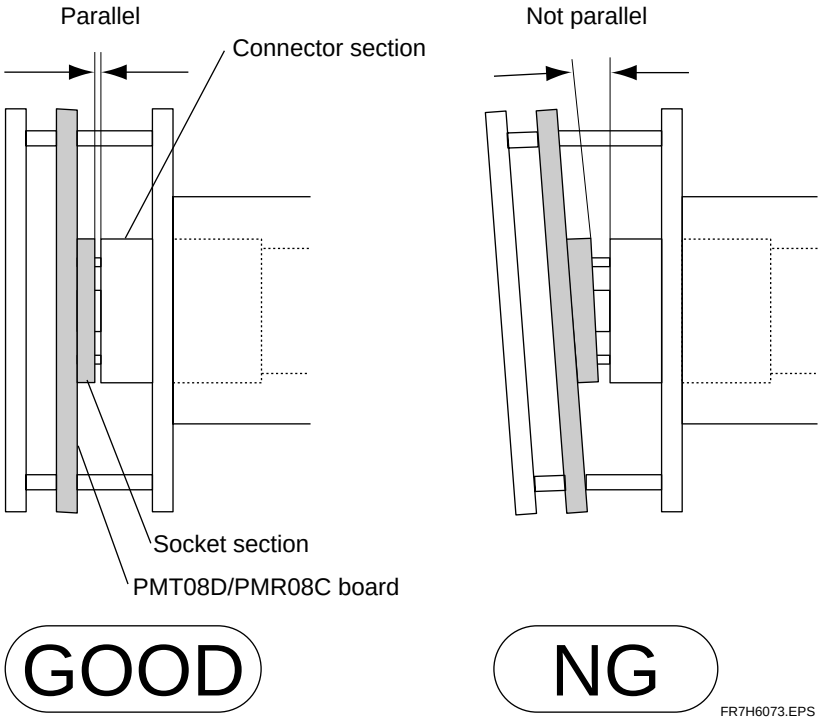


(6) Connect the PMR08C board connectors.



◆ *CHECKS* ◆

- *Check that the PMT08DPMR08C board socket section is parallel to the light-collecting guide connector section.*



- *Check that the light-collecting guide assembly is mounted in the correct position.*

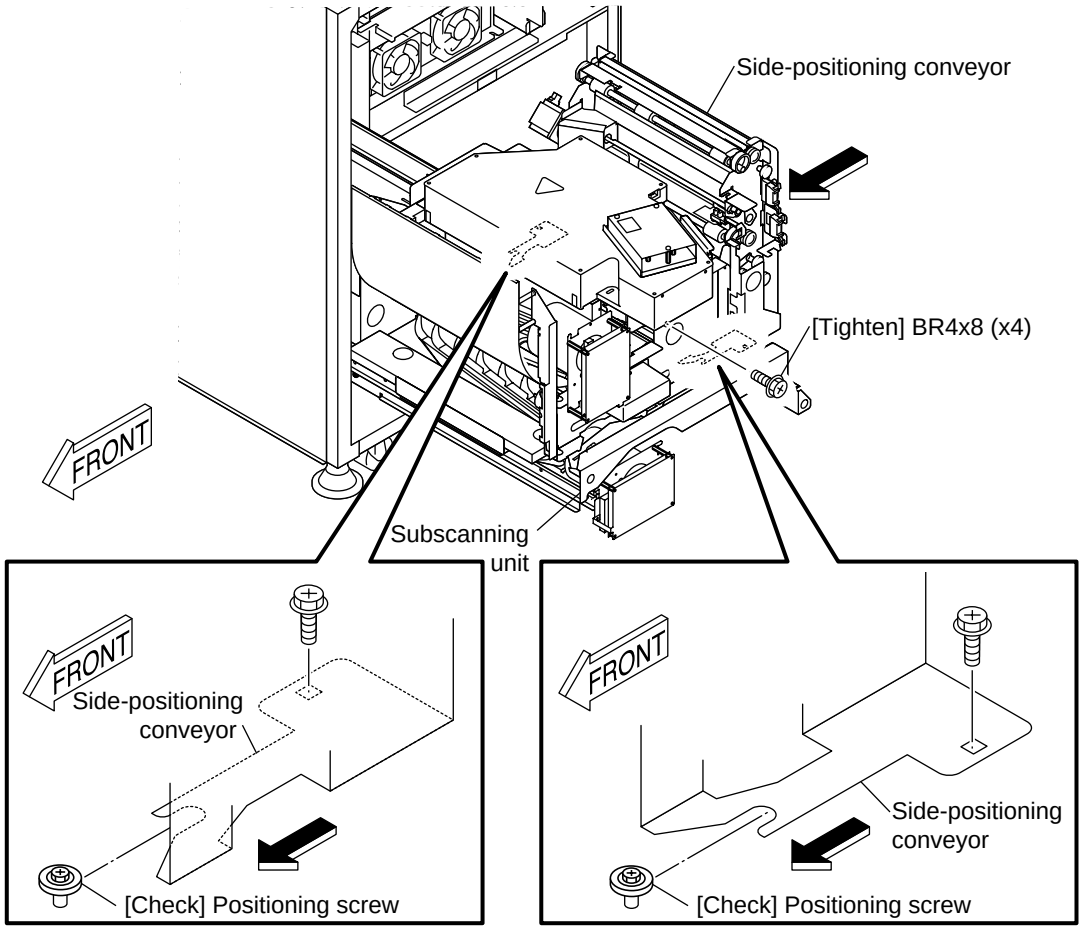
9.16 Installing the Side-Positioning Conveyor

1Y

At intervals of one year, or when 60,000 IPs have been processed → Install

◆ ***NOTES*** ◆

- *Press the side-positioning conveyor against the positioning screws.*
- *When tightening the screws, begin by tightening the screws on the right-hand side plate for the subscanning unit.*



Reversing the procedures described in “9.3 Removing the Side-Positioning Conveyor,” install the side-positioning conveyor.

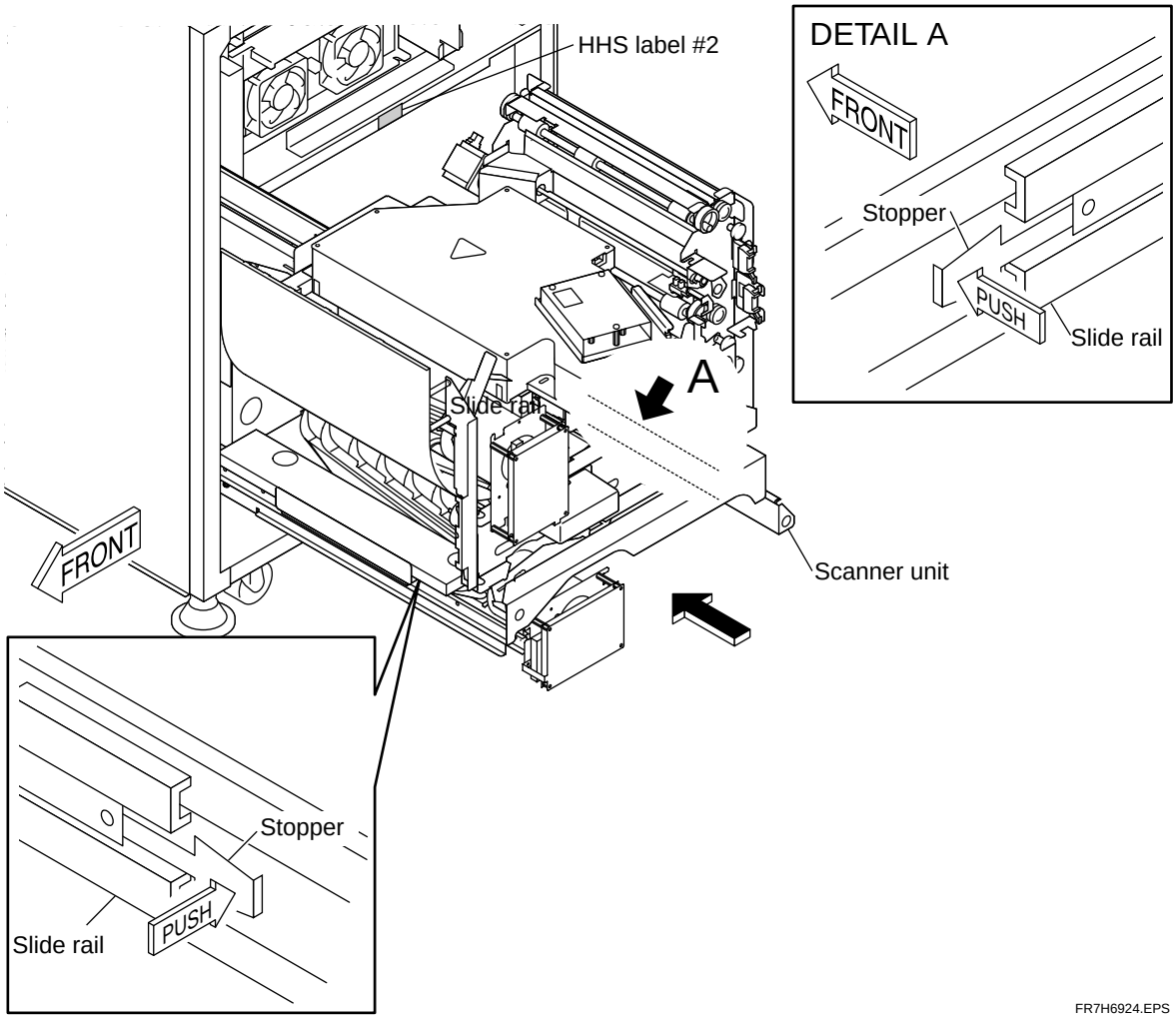
9.17 Pushing In the Scanner Unit

1Y

At intervals of one year, or when 60,000 IPs have been processed → Push in.

◆ ***NOTES*** ◆

- *When pushing in the scanner unit, exercise care so that the disconnected connectors and cables are not caught.*
- *Push the scanner unit all the way into the machine, while pressing the stoppers of the slide rails.*



By reversing the procedures described in “9.2 Pulling Out the Scanner Unit,” push in the scanner unit.

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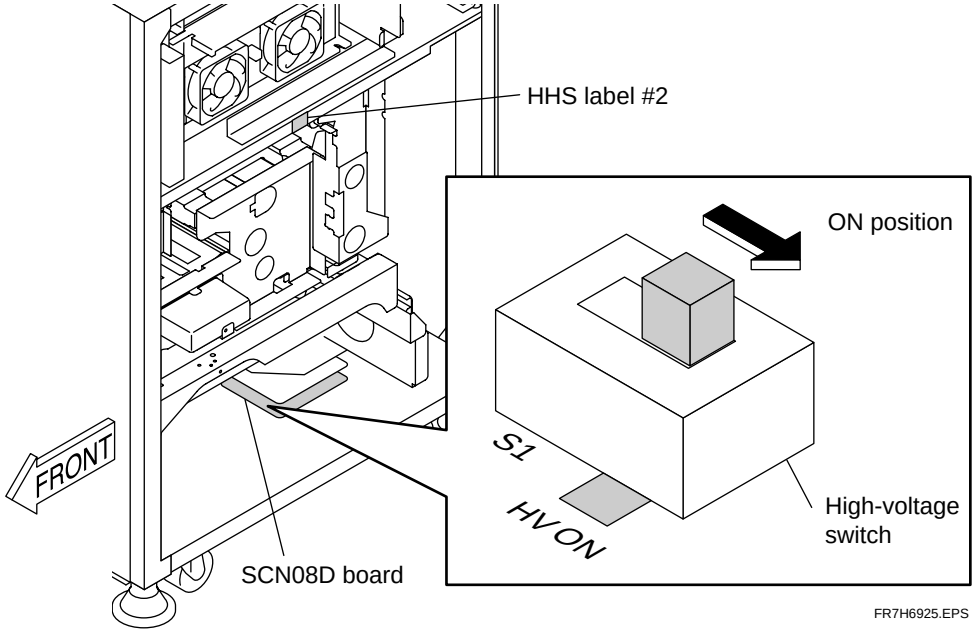
10. Turning ON the High-Voltage Switch

1Y

At intervals of one year, or when 60,000 IPs have been processed → Turn ON.

Turn ON the high-voltage switch (S1) of the SCN08D board.



11. Installing and Cleaning the Covers

1Y

At intervals of one year, or when 60,000 IPs have been processed

→ Install and clean.

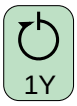
(1) By reversing the procedures described in “4. Removing the Covers,” install all the covers.

(2) Clean all the covers with a moistened cloth.

◆ ***CHECKS*** ◆

• Make sure that the screws on the covers are attached securely.
• Verify that there is no missing screw.

12. Checking the Date and Time



At intervals of one year, or when 60,000 IPs have been processed → Check.

(1) Power ON the machine.
(2) Start the M-Utility.
(3) [Date/Time Setting]
(4) Check the current date and time.
(5) [Return]

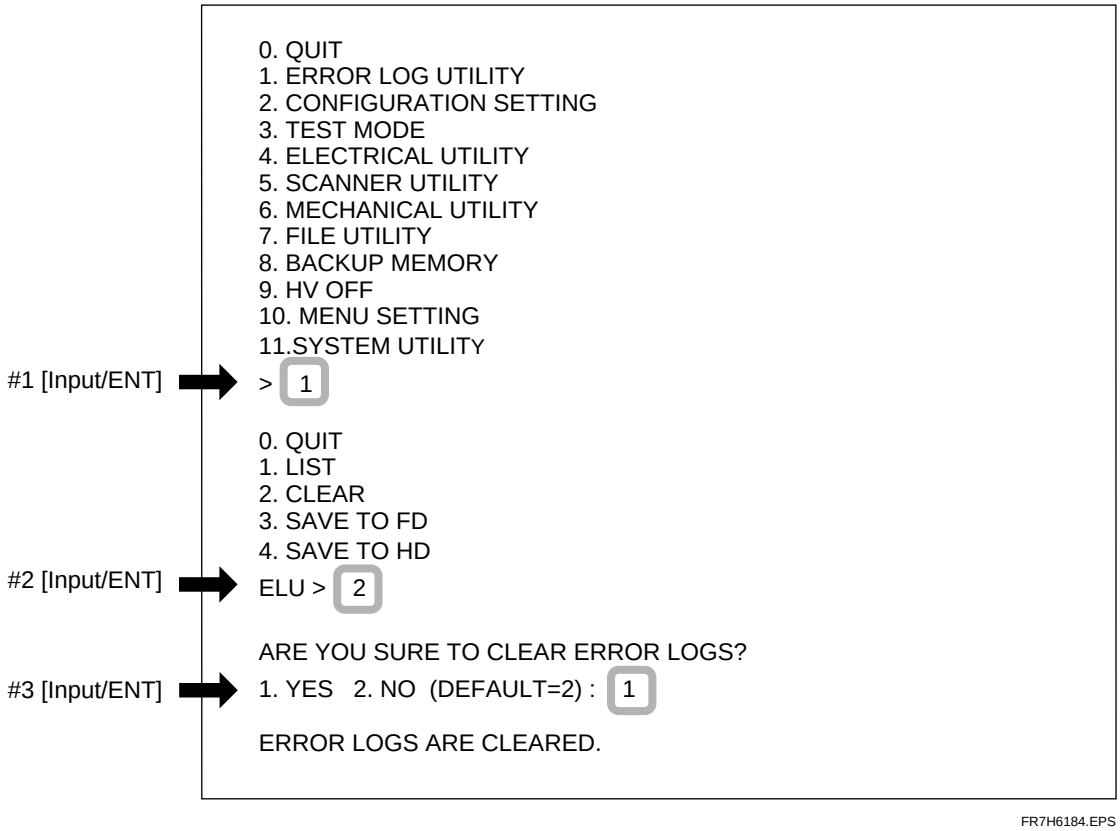
13. Deleting the Error Log

1Y

At intervals of half year → Delete.

(1) Start the M-Utility.

(2) Delete the error log.



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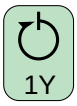
➪ When all the error logs are deleted, a message “ERROR LOGS ARE CLEARED.” appears.

(3) [0] [ENT] [0] [ENT]

(4) [Return]

14. Checking the Image



At intervals of half year → Check.

☞ “2.2 Checking the Image”